

AD-A066 401

DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA  
STATE OF THE ART REVIEWS.(U)  
MAR 79

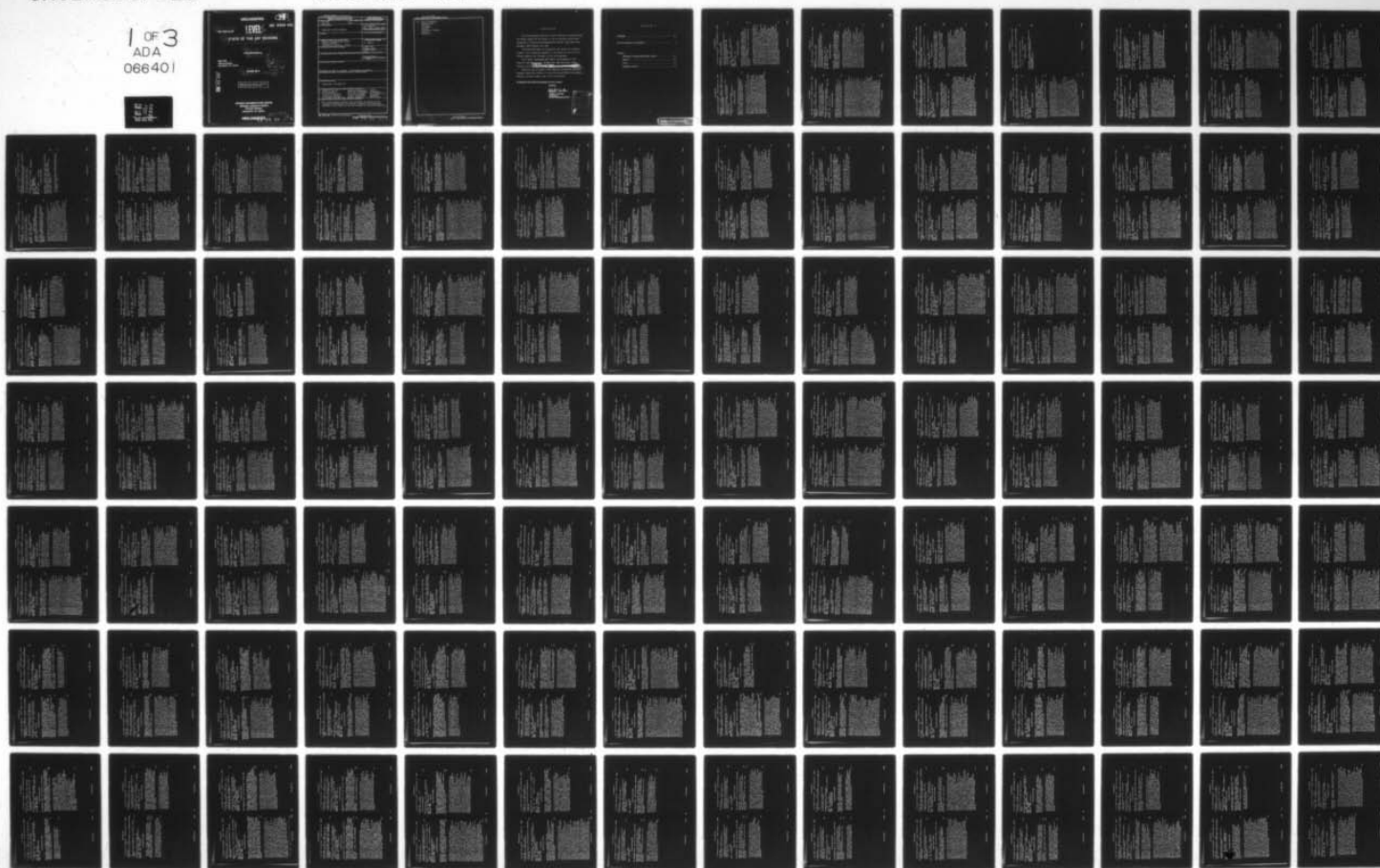
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LEVEL II

AD- A066 401

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STATE OF THE ART REVIEWS.

9

Report  
A DDC BIBLIOGRAPHY

Dec 65-Jul 78.

DDC-TOS  
Cameron Station  
Alexandria, Va. 22314

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<table border="0"> <tr> <td>* State of the art</td> <td>Research Management</td> <td>Lasers</td> </tr> <tr> <td>* Bibliographies</td> <td>Electronic Equipment</td> <td>Holography</td> </tr> <tr> <td>* Scientific Research</td> <td>Aircraft Equipment</td> <td>Instrumentation</td> </tr> <tr> <td>Literature Surveys</td> <td>Flight Instruments</td> <td>Computers</td> </tr> <tr> <td>Earthquake Engineering</td> <td>Medical Research</td> <td>Meteorology</td> </tr> </table>			* State of the art	Research Management	Lasers	* Bibliographies	Electronic Equipment	Holography	* Scientific Research	Aircraft Equipment	Instrumentation	Literature Surveys	Flight Instruments	Computers	Earthquake Engineering	Medical Research	Meteorology
* State of the art	Research Management	Lasers															
* Bibliographies	Electronic Equipment	Holography															
* Scientific Research	Aircraft Equipment	Instrumentation															
Literature Surveys	Flight Instruments	Computers															
Earthquake Engineering	Medical Research	Meteorology															
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  This bibliography contains 335 citations pertinent to the evaluation and results of surveys, studies, and literature searches in the state of the art reviews of selected subjects.																	

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19. Data Processing  
Oceanography  
Fluidics  
Pavements  
Reviews  
Literature Surveys  
Indexes  
Abstracts

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## FOREWORD

This bibliography consists of 335 citations of unclassified/unlimited reports on *The State of the Art Reviews*, which were processed in the Defense Documentation Center's data bank from December 1965 through July 1978.

Citations pertinent to evaluation and results of surveys, studies, and literature searches in the state of the art of selected subjects are included in this bibliography.

This report supersedes DDC report bibliography on The State of the Art Reviews, AD-A005 375, DDC-TAS-74-41, dated February 1975, ~~and AD-A005 375, DDC-TAS-74-41, dated February 1975, and AD-A005 375, DDC-TAS-74-41, dated February 1975.~~

Reference are arranged in AD numerical descending sequence. Computer generated indexes of Corporate Author/Monitoring Agency, Subject, Personal Author and Title are provided.

BY ORDER OF THE DIRECTOR, DEFENSE LOGISTICS AGENCY

OFFICIAL

*Hubert E. Sauter*

**HUBERT E. SAUTER**  
Administrator  
Defense Documentation Center

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## C O N T E N T S

FOREWORD ..... iii

AD BIBLIOGRAPHIC REFERENCES ..... 1

### INDEXES

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SUBJECT ..... D-1

TITLE ..... T-1

PERSONAL AUTHOR ..... P-1



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A060 091 15/7 13/2 15/3  
OFFICE OF THE CHIEF OF ENGINEERS (ARMY) WASHINGTON D C  
ENGINEER STUDIES GROUP

Battlefield Obstacles -- An Appraisal of the  
State of the Art in Measuring Obstacle  
Effectiveness. (U)

DESCRIPTIVE NOTE: Final rept.,  
SEP 76 72P Cooper, Gerald E. ;

UNCLASSIFIED REPORT

DESCRIPTORS: \*Battlefields, \*Barriers, \*Military  
tactics, \*Combat effectiveness, Combat areas,  
State of the art, Warfare, Military engineers,  
Military strategy, War games, Simulation (U)

The US Army is concerned with the question:  
What do obstacles have to do with winning or losing  
battles. This appraisal collects many thoughts from  
a variety of sources about the measurement of  
demonstration of the effectiveness of battlefield  
obstacles, natural and manmade. From consideration  
of the historical record and a number of approaches  
to combat analysis, the paper notes that the  
measurement of obstacle effectiveness has remained  
primitive and produced unconvincing results. Part  
of the difficulty is traced to limitations in the  
representation and interpretation of obstacle-free  
combat. The paper concludes that, despite a number  
of identified difficulties, obstacle-related combat  
analysis can be made much more convincing and offers  
several suggestions toward that aim. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A059 797 6/3 6/5  
DAYTON UNIV OHIO RESEARCH INST

Procedures Used to Generate Three- and Six-  
Year-Old-Child Data Sets for the  
Articulated Total Body Model from  
Anthropometric Data. (U)

MAY 78 15P Leet, Duane G. ;  
CONTRACT: F33615-78-C-0504  
PROJ: 7231  
TASK: 05  
MONITOR: AMRL 78-11

UNCLASSIFIED REPORT

DESCRIPTORS: \*Anthropometry, \*Crash injuries,  
Aircraft, Passengers, Models, Anatomy, Input,  
Computer programs, Geometric forms, State of the  
art, Motor vehicle accidents, Cost effectiveness,  
Protection, Vehicles (U)  
IDENTIFIERS: Anthropometric data, WUAMRL72310518,  
PER2202F (U)

A class of rigid component, chained system models  
has been developed to predict relative limb and whole  
body motion of humans during vehicle crashes and  
aircraft ejection situations. Members of this class  
include the 3-D Crash Victim Simulator and  
the Articulated Total Body Model. Both have  
similar input data requirements, including individual  
segment inertial properties, joint locations and  
their biomechanical characteristics, and contact  
surface definitions. Currently, the only body class  
for which a significant amount of such data exist is  
the adult male. In this paper state-of-the-art  
techniques are presented for generating ATB Model  
input data sets for two other body classes, the  
three- and six-year-old child, from anthropometric  
data. The anthropometric data on these two classes  
are unique because dental stone manikins have been  
developed from them that provide various direct  
inertia and dimensional data for comparison with the  
corresponding values developed using these  
techniques. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD-A059 073 8/11 8/6  
SAINT LOUIS UNIV MO DEPT OF EARTH AND ATMOSPHERIC  
SCIENCES

State-of-the-Art for Assessing Earthquake  
Hazards in the United States. Report 10.  
Attenuation of High-Frequency Seismic Waves  
in the Central Mississippi Valley. (U)

DESCRIPTIVE NOTE: Miscellaneous paper,  
JUL 78 79p Nuttli, Otto W.; Dwyer, John  
J.  
MONITOR: WES MP-S-73-1-10

UNCLASSIFIED REPORT

DESCRIPTORS: \*Earthquakes, \*United States,  
\*Threat evaluation, Mississippi, State of the art,  
Seismic data, Ground motion, Seismic waves,  
Attenuation, Statistical analysis, Seismological  
stations, Hazards, Earthquake engineering (U)

This study was concerned with the attenuation of  
high-frequency earthquake waves in the central  
Mississippi valley. The data were obtained from  
seismographs which measured the vertical component of  
ground motion. Recording was on analog magnetic  
tape and on 16-mm photographic film. Most attention  
was devoted to a study of Lg waves, which are  
higher mode surface waves that produce the largest  
ground motion. At frequencies of 1 to 10 Hz the  
specific dissipation factor Q of the Lg waves was  
found to be 1500. The results of the present study  
indicate that in the central United States high-  
frequency waves will produce significant ground  
motions at relatively large distances, which is not  
the case in California or other tectonic areas.  
In the frequency domain the Fourier displacement  
spectra of the Lg motion showed the typical flat  
level at the lower frequencies and the rapid fall-off  
of amplitude with increasing frequency at the high  
frequencies. In the time domain, on the other hand,  
the level of ground displacement in the source region  
was essentially constant between frequencies of 1 to  
10 Hz. This fact, together with the relatively  
low attenuation of the Lg waves, indicates that  
waves of frequencies as high as 10 Hz may have  
relatively large amplitudes and accelerations at  
epicentral distances as large as hundreds of  
kilometers for central United States earthquakes (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD-A058 797 4/1 20/3  
GEORGIA INST OF TECH ATLANTA

Federal Aviation Administration-Georgia  
Institute of Technology Workshop on Grounding  
and Lightning Protection. Held at Atlanta,  
Georgia on May 2-4 1978. (U)

DESCRIPTIVE NOTE: Final rept.  
MAY 78 419P  
MONITOR: FAA-RD 78-83

UNCLASSIFIED REPORT

DESCRIPTORS: \*Lightning, \*Electrical grounding,  
Electronic equipment, Protection, Aviation safety,  
Workshops, State of the art, Safety, Voltage  
regulators, Storms, Simulation, Electromagnetism,  
Shielding, Inductance (U)

A state-of-art review and background research  
reveals a number of opinions as to the preferred  
techniques of grounding of electronic equipment and  
systems. These techniques become important when  
protection must be provided for transients induced by  
lightning, electromagnetic pulses (EMP) and other  
sources. The Systems Research and Development  
Service of the Federal Aviation  
Administration in conjunction with the Georgia  
Institute of Technology conducted a workshop  
which brought together distinguished experts in the  
fields of grounding, lightning, transient protection,  
EMP protection for electrical and electronic  
facilities and lightning transient protection of  
aircraft electronics. This report contains the  
papers presented at the workshop. This is the fifth  
workshop conducted on the subject. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A058 456

10/2

ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND FORT  
MONMOUTH NJ ELECTRONICS TECHNOLOGY/DEVICES LAB

Improved Anodes for Liquid Hydrocarbon Fuel  
Cell. (U)

DESCRIPTIVE NOTE: Research and development technical

rept..

APR 78 17P Perry, John ;

REPT. NO. DELET-TR-78-8

PROJ: 15762705AH94

TASK: P1

UNCLASSIFIED REPORT

DESCRIPTORS: \*Fuel cells, \*Anodes, Carbinols,  
Hydrocarbons, Liquid phases, Ethylene glycol,  
State of the art, Catalysts, Platinum,  
Palladium, Lead dioxide, Graphite, Silver  
compounds, Air, Power supplies, Military  
applications (U)

IDENTIFIERS: PE62705A, ASH94, WU032 (U)

Low power fuel cells operating on liquid hydrocarbons, such as methanol and ethylene glycol, have received renewed attention. The current state-of-the-art of anodes used in liquid hydrocarbon fuel cells operating at ambient temperatures of 22 C consist of platinum and palladium catalyst loadings of approximately 10 mg/sq cm. The cost and quantity of these noble metals required for anode electrode fabrication are high. Investigations conducted to reduce the noble metal catalyst loadings have lead to the development of an electrode consisting of graphite, platinum (2.4 mg/sq cm), and anodic lead dioxide. Cells fabricated with the new anode (graphite, platinum, and lead dioxide) and silver amalgam cathodes were capable of operating at current densities of 20 mA/sq cm at 0.60 V when charged with an anolyte solution of either methanol in potassium hydroxide or ethylene glycol in potassium hydroxide. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A057 834

20/4

ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
NEUILLY-SUR-SEINE (FRANCE)

Instability, Transition to Turbulence and  
Predictability, (U)

JUL 78 40P

Morkovin, M. V. ;

REPT. NO. AGARD-AG-236

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the AGARD Fluid  
Dynamics Panel Symposium on Laminar-Turbulent  
Transition Held at Lyngby (Denmark) 2-4 May 77.

DESCRIPTORS: \*Boundary layer transition, Laminar  
flow, Turbulent flow, Stability, Flow fields,  
Mathematical prediction, Symposia, Literature  
surveys, State of the art (U)  
IDENTIFIERS: NATO furnished (U)

Contained herein is a concise state-of-the-art review and perspective on the phenomenon of transition which constituted the Opening Address at the Fluid Dynamics Panel Symposium on Laminar-Turbulent Transition (AGARD-CP-224). Various instability mechanisms leading to transition are proposed and discussed. A valuable insight is provided based on existing experimental evidence and postulated flow structures. Critical questions are asked relating to the conceptual foundations on which much of the transitional effort is based. To enhance our understanding of the basic mechanisms and processes, detailed microscopic experiments are encouraged to increase the data base. (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A057 562 5/1 5/9 5/10 5/10  
NAVY PERSONNEL RESEARCH AND DEVELOPMENT CENTER SAN DIEGO  
CALIF

Job Performance Aids: Research and  
Technology State-of-the-Art.

(U)

DESCRIPTIVE NOTE: Final rept..

JUL 78 93P Booher, Harold R. ;  
REPT. NO. NPRDC-TR-78-26

PROJ: Z0828

TASK: Z0828-PN

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Personnel management, \*Naval training,  
\*Information systems, \*Job analysis, \*Job  
training, \*Performance(Human), \*State of the  
art, Job satisfaction, Systems analysis,  
Mathematical analysis, Costs, Cost analysis,  
Test and evaluation, Naval personnel, Mathematical  
models, Goal programming  
IDENTIFIERS: Job performance aids, Research and  
technology, PE53720N

(U)

(U)

This report describes and compares the various  
Job Performance Aid techniques and identifies  
and categorizes factors important to selection,  
design, cost-performance trade-off, conduct of future  
research, and implementation of performance aiding  
technology. More than 100 surveyed JPA systems  
and techniques are classified under five  
categories: (1) format/content, (2) display  
media, (3) applied training, (4) peripheral  
test/diagnostic, and (5) delivery systems.  
Major factors are identified as critical to the  
development of a JPA algorithm, including personnel  
aptitude and experience, type and complexity of task,  
type and complexity of equipment, and degree of  
proceduralization required. A conceptual model is  
presented for use by the JPA community in cost  
trade-off analyses, in JPA selection algorithms,  
and in the grouping of theoretical trends. The  
report also presents a theoretical base for use of  
memory in JPA; previews a theory for mixing JPA  
techniques, principles, and methodologies; and  
outlines goals for future JPA research and  
technology efforts. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A056 451 15/7  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISS

Tunnel Destruction State-of-the-Art,

(U)

JUN 78 11P Joachim, Charles E. ;

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Tunnels, \*Destruction, \*State of the  
art, Army operations, Sizes(Dimensions),  
Length, Damage  
IDENTIFIERS: Criteria

(U)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A056 014 17/8 20/6  
 ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND DOVER NJ  
 TECHNICAL SUPPORT DIRECTORATE

Beyond the State-of-the-Art Illumination  
 Measurements.

(U)

DESCRIPTIVE NOTE: Final rept.,  
 APR 78 29P Smith, C. L.; Everswick, D.

N. ;  
 REPT. NO. ARTSD-TR-77002  
 MONITOR: SBIE AD-E400 151

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Illuminants, \*Photometry, Test  
 methods, Field conditions, Data reduction, Real  
 time, State of the art, Mathematical models,  
 Illumination, Light, Intensity, Flares,  
 Computer programs, Light transmission, Radiation  
 attenuation, Atmospheres, Transmittance,  
 Reduction, Costs

(U)

The invention of a direct method of obtaining  
 candlepower has led to the development of a  
 mathematical model of a simplified system for field  
 testing illuminant items. In addition to obtaining  
 the light intensity independent of the source  
 distance, an innovation for assessing the atmospheric  
 transmissivity is described. The light  
 transmission is measured without employing special  
 equipment other than that used for the basic  
 candlepower measurements. The model configuration  
 constraints are based on present field test practice.  
 This technique will allow two or three people to  
 set up and man a complete field test system. Test  
 results which formerly required extensive data  
 reduction and processing will be available on-site  
 for instant readout. Besides increasing the  
 reliability of data and on-the-spot readout, this  
 system should reduce costs and generally enhance  
 illuminant testing. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A055 971 8/11 5/2  
 ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
 MISS

State-of-the-Art for Assessing Earthquake  
 Hazards in the United States. Report 9.  
 Catalogues of Strong Motion Earthquake  
 Records. Volume I. Western United  
 States, 1933-1971.

(U)

DESCRIPTIVE NOTE: Miscellaneous paper,  
 APR 78 56P Chang, Frank K. ;  
 REPT. NO. WES-MP-S-73-1-9-VOL-1

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Rept. no. 8, AD-A050  
 750.

DESCRIPTORS: \*Earthquakes, \*Catalogs, Records,  
 Intensity, Faults(Geology), Depth, Site  
 selection, Classification, Acceleration, Peak  
 values, Velocity, Displacement, Epicenters,  
 Graphs, Earthquake engineering, Ground motion,  
 State of the art

(U)

A working catalogue was prepared to facilitate the  
 selection of strong motion earthquake records for  
 design purposes. The records are those processed  
 by the California Institute of Technology from  
 western United States during the period 1933-  
 1971. They are presented graphically in terms of  
 magnitude, type of fault, focal depth, site  
 classification, peak acceleration, velocity,  
 displacement, duration, and distance from epicenter.  
 (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A055 739 11/4 20/11  
ILLINOIS UNIV AT CHICAGO CIRCLE DEPT OF MATERIALS  
ENGINEERING

A Review of Dynamic Response of  
Composites. (U)

DESCRIPTIVE NOTE: Final rept. 1 Jul 75-31 Dec 76.  
APR 78 141P Lee, T. C.; Ting, T. C.

CONTRACT: DAAG46-75-C-0090  
PROJ: 1W362306AH72  
MONITOR: AMMRC TR-78-20

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Composite materials, \*Dynamic response, Literature surveys, State of the art, Harmonic analysis, Transients, Dynamic loads, Mathematical analysis, Anisotropy, Modulus of elasticity  
IDENTIFIERS: PE62306A, ASH72 (U)  
(U)

The purpose of this project was to review the state of the art on the dynamic response of composites and to suggest possible future research directions. More than three hundred papers are reviewed and compiled at the end of this report. The existing theories of the dynamic response of composites are summarized in Chapter I. The harmonic waves and transient waves in, and the experiments on, composites are discussed in Chapters II, III and IV, respectively. The differences between various theories and possible future research directions are presented in Chapter V.  
(Author) (U)

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AD-A054 246 1/4  
NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC  
CITY N J

Head-Up Displays: A Literature Review  
and Analysis with an Annotated  
Bibliography. (U)

DESCRIPTIVE NOTE: Final rept. Oct 76-Sep 77,  
APR 78 134P Shrager, Jack J.;  
REPT. NO. FAA-NA-77-42  
MONITOR: FAA/RD 78/31

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Original contains color plates:  
All DDC reproductions will be in black and white.

DESCRIPTORS: \*Head up displays, \*Flight instruments, \*Bibliographies, Cockpits, Civil aviation, Display systems, State of the art, Pilots, Human factors engineering, Symbols, Aviation safety, Avionics, Approach indicators  
IDENTIFIERS: LPN-FAA-073-320-510 (U)  
(U)

This report is, in part, a bibliographic compilation of 293 publications relating to head-up displays (HUD's) for aircraft cockpit application and a summary of an evaluation of their contents in the areas of human factors, optical techniques, symbology, system concept, safety, simulation and flight test, and other factors on applications. The objective of this in-depth literature review is to determine the appropriate follow-up course of action in HUD's as it relates to civil aircraft application using current production HUD's. The results of a state-of-the-art HUD analysis which was also performed simultaneously is also summarized. It indicated that a HUD for the next generation can offer not only (1) resolution of illusory problems, (2) reduction in pilot workload, (3) standardized cockpit procedures for both IFR and VFR operation, (4) reduction in intercrew dependency and coordination, but also has the potential for (5) terrain avoidance during takeoff and landing, (6) collision avoidance both in-flight and during ground operations, (7) taxi and takeoff clearance and conformation, (8) clearance delivery, (9) weather advisories, (10) efficient energy management and fuel economy, (11) noise abatement guidance, (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A053 322 22/3  
AEROSPACE CORP EL SEGUNDO CALIF ENGINEERING SCIENCE  
OPERATIONS

High Altitude Attitude Determination  
Study.

(U)

DESCRIPTIVE NOTE: Final rept.,

MAR 78 265P Uyeminami, Richard T. ; Dixon,  
Martin V. ; Fuhrman, Thomas A. ; Melzer, Stuart  
M. ; Potter, J. E. ;

REPT. NO. TR-0078(3526)-1

CONTRACT: F04701-77-C-0078

MONITOR: SANSO TR-78-70

UNCLASSIFIED REPORT

DESCRIPTORS: \*Satellite attitude, \*Attitude control  
systems, Determination, Space technology,  
Artificial satellites, Systems analysis,  
Mathematical models, Detectors, Filters, Kalman  
filtering, High altitude, State of the art  
IDENTIFIERS: High Altitude Attitude  
Determination Study, Attitude reference  
systems

(U)

(U)

Results are presented of various hardware and  
software studies to determine the attitude of  
satellites in high altitude (greater than 500  
nmi) orbits. A technology survey was conducted to  
determine the state of the art in attitude reference  
systems and sensors. Six attitude reference system  
conceptual designs are hypothesized and parametric  
performance analyses conducted to determine their  
performance capabilities. Performance sensitivities  
for various sensor and filter combinations are  
presented, and possible areas for technology  
improvements are suggested. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A052 048 9/3  
NAVAL SURFACE WEAPONS CENTER WHITE OAK LAB SILVER SPRING  
MD

Analog without Fear.

(U)

DESCRIPTIVE NOTE: Final rept.,

DEC 77 23P DeLagrange, Arthur D. ;  
REPT. NO. NSWC/WOL/TR-77-173  
PROJ: W0490, WAS47  
TASK: W0490140

UNCLASSIFIED REPORT

DESCRIPTORS: \*Analog systems, \*Circuit analysis,  
State of the art, Linear systems, Operational  
amplifiers, Integrated circuits, Electronic filters,  
Comparison, Digital systems,  
Reliability(Electron.cs), Phase locked systems,  
Voltage regulators, Multiplexing, Converters,  
Timing circuits

(U)

(U)

IDENTIFIERS: PE64219N, WUA533533300C4D

Analog circuitry, also referred to as Linear, has  
been nearly run over by the digital/computer  
bandwagon. This is unfortunate because tremendous  
advances are being made in the field of analog  
integrated circuitry. Each year's progress raises  
the state-of-the-art, bringing achievements not  
possible even the year before. Many of the  
traditional prejudices against analog circuitry are  
no longer valid. This report attempts to summarize  
what is available now and what can (and can't) be  
done with analog integrated circuitry.

(U)

(Author)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A051 439 4/2  
CALIFORNIA UNIV BERKELEY STATISTICAL LABA Statistician's View of Weather  
Modification Technology (A Review).AUG 77 10P Neyman, Jerzy ;  
CONTRACT: DAAG29-76-G-0167  
MONITOR: ARD 13676.1-M

## UNCLASSIFIED REPORT

Availability: Pub. in the Proceedings of the  
National Academy of Sciences v74 n11 p4714-4721  
Nov 77.DESCRIPTORS: \*Weather modification, \*State of the  
art, United States Government, Policies, Cloud  
seeding, Rainfall, Statistical analysis,  
Reprints

(U)

The present paper is motivated by the enactment, in October 1976, of Public Law 94-490 which directs the U.S. Secretary of Commerce to formulate an appropriate national policy on weather modification. The current widespread drought contributes to the interest in the present state of this art. Here, then, the question of national policy becomes combined with the necessity of a more or less immediate decision on the use of public funds to pay for cloud seeding operations (as distinct from experiments) with the hope of increasing precipitation where it is most needed. The following presents a series of facts deemed relevant both to the immediate question of alleviating the drought and to the more general problem of long-range national policy. (Author)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A051 069 12/1  
SOUTHERN METHODIST UNIV DALLAS TX DEPT OF OPERATIONS  
RESEARCH AND ENGINEERING MANAGEMENTThe Convex Cost of Network Flow  
Problem: A State-of-the Art Survey.

(U)

DESCRIPTIVE NOTE: Interim rept.,  
JAN 78 44P Ali, A. I. ; Melgason, R.  
V. ; Kennington, J. L. ;  
REPT. NO. OREM-78001  
CONTRACT: AFOSR-77-3151  
PROJ: 2304  
TASK: A6  
MONITOR: AFOSR TR-78-0332

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Network flows, \*Nonlinear programming,  
Cost analysis, Convex sets, Algorithms,  
Mathematical models, Distribution theory,  
Production models, Surveys, State of the art,  
Flow fields, Simplex method  
IDENTIFIERS: PEG1102A

(U)

(U)

This exposition presents a state-of-the-art survey  
of models and algorithms for the convex cost network  
flow problem. (Author)

(U)



## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A050 750 8/11  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISS

State-of-the-Art for Assessing Earthquake Hazards in the United States. Report 8. Duration, Spectral Content, and Predominant Period of Strong Motion Earthquake Records from Western United States.

(U)

DESCRIPTIVE NOTE: Miscellaneous paper,  
DEC 77 87P Chang, Frank K. ; Krinitzsky,  
Ellis L. ;  
REPT. NO. WES-MP-S-73-1-8

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Rept. no. 7, AD-A048 309.

DESCRIPTORS: \*Earthquakes. Hazards, State of the art. Ground motion. Earthquake engineering. Measurement

(U)

IDENTIFIERS: Earthquake resistant structures

The purposes of this investigation were principally to assess the duration and spectral content of strong-earthquake accelerograms and, indirectly, to consider their applicability in earthquake design. Correlations of duration with MM intensity for the near and far fields and for Richter magnitude have been obtained. Difference in durations for soil and rock sites was determined. A set of relations between the duration and distance for soil and rock sites was established from records of the San Fernando Earthquake of 9 February 1971 (magnitude of 6.5). Values for other magnitudes were extrapolated. Duration is taken to be the time interval between the first and last peaks of acceleration equal to or greater than 0.05 g. The spectral content in the range of 0.1-10 Hz for strong-motion records in western United States for acceleration level equal to or greater than 0.05 g processed with the modified Nigam and Jennings' response spectra computer programs.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A049 770 13/8 11/6  
BATTELLE COLUMBUS LABS OHIO METALS AND CERAMICS  
INFORMATION CENTER

Rheocasting. Proceedings of the Work Shop on Rheocasting held at Army Materials and Mechanics Research Center on 3-4 February 1977.

(U)

DESCRIPTIVE NOTE: State of the art rept.,  
JAN 78 139P French, Robert D. ; Modi,  
Frank S. ;  
REPT. NO. MCIC-78-35  
CONTRACT: DSA900-76-C-2471

## UNCLASSIFIED REPORT

Available from National Technical Information Service, Springfield, Va. 22161. PC \$12.50, MF \$12.50.

DESCRIPTORS: \*Casting. \*Slurries. \*Metallurgy. \*State of the art. Workshops (Meetings). Abstracts, Alloys, High strength alloys. Technology, Castings, Dies, Steel. Superalloys, Copper alloys, Aluminum alloys, Economics, Planning, Technology forecasting

(U)

IDENTIFIERS: \*Rheocasting, Thixocasting

This booklet contains a program and extended abstracts of presentations given at a Workshop on Rheocasting held at the Army Materials and Mechanics Research Center, Watertown, MA, on 3-4 February 1977. The purpose of the meeting was twofold: (1) to disseminate information on the state-of-progress in the continuing development of Rheocasting, and (2) to obtain comments from industry on its future development to assist Department of Defense planning.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A049 338 11/9 7/3  
 NATIONAL MATERIALS ADVISORY BOARD (NAS-NAE) WASHINGTON D  
 C

Organic Polymer Characterization. (U)

DESCRIPTIVE NOTE: Final rept. (U)

77 152P

REPT. NO. NWAB-332

CONTRACT: MDA903-74-C-0167

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Polymers, \*Plastics, \*State of the  
 art, Structures, Structural properties, Military  
 requirements, Space technology, Molecular structure,  
 Molecular properties, Physical properties,  
 Mechanical properties, Test methods,  
 Fracture(Mechanics), Amorphous materials,  
 Organic materials, Elastomers, Foam, Glass,  
 Crystals (U)

This report attempts to define those properties of  
 organic polymers that are critical to their use in  
 current and advanced structural applications. It  
 discusses and evaluates the characterization  
 methodology that is available to measure and control  
 those properties. It suggests some specific areas  
 in which this technology can be employed to achieve  
 improved performance and reliability through its  
 application to procurement and quality control  
 procedures. Case studies are presented to  
 illustrate the utilization of characterization.  
 Conclusions and recommendations are presented. A  
 list of more than a hundred useful methods of  
 characterization with Committee commentary on use  
 and limitations is given in an appendix.  
 (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A049 247 5/9 9/2 5/8  
 AIR FORCE HUMAN RESOURCES LAB BROOKS AFB TEX

Display and Speech Devices for Simulator  
 Instructor/Operator Station Applications. (U)

DESCRIPTIVE NOTE: Final rept. Jun 75-Jun 76,

DEC 77 18P

REPT. NO. AFHRL-TR-77-50

PROJ: 6114

TASK: 20

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Flight simulators, \*Flight training,  
 \*Display systems, \*Speech recognition,  
 Instructors, Operators(Personnel), Cathode ray  
 tubes, Man computer interface, State of the art,  
 Line scanning, Rasters, Input output devices,  
 Voice communications, Liquid crystal display  
 systems, Plasmas(Physics), Calligraphic  
 displays, Screens(Displays), Stereoscopic  
 display systems, Computer graphics, Speech,  
 Synthesis (U)  
 IDENTIFIERS: WUAFHRL61142001, PE62205F (U)

The Air Force Human Resources Laboratory  
 (AFHRL) has the responsibility for research and  
 development of advanced simulation techniques,  
 including more efficient and more effective  
 Instructor Operator Stations (IOS) which  
 would possibly use newly developed display devices  
 and techniques and speech response/recognition  
 devices. This review was undertaken to become  
 better acquainted with the state of the art of  
 hardware devices which could be used for the IOSs  
 of advanced aircraft training simulators and to  
 provide some guidance in these devices to designers,  
 specifier and users of IOSs. Attention focused  
 mainly on display devices and speech response/  
 recognition devices. A survey of technical  
 literature concerning display devices, and speech  
 synthesis and speech recognition devices was  
 accomplished and contacts were established with a  
 number of manufacturers and developers of these  
 devices to determine the latest developments and  
 potential applications. Also, literature was  
 searched for R and D related to the application  
 of such devices. (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A048 309 8/11  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISS

State-Of-The-Art for Assessing Earthquake  
Hazards in the United States. Report 7.  
Specifying Peak Motions for Design  
Earthquakes.

(U)

DESCRIPTIVE NOTE: Miscellaneous paper,  
DEC 77 38P Krinitzky, Ellis L. ; Chang,  
Frank K. ;  
REPT. NO. WES-MP-S-73-1-7

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Rept. no. 6, AD-A040  
870.

DESCRIPTORS: \*Earthquakes, Forecasting,  
Correlation techniques, Hazards,  
Faults(Geology), Strength(General), Threat  
evaluation, Folds(Geology), Earthquake resistant  
structures, Tectonics, State of the art, Ground  
motion  
IDENTIFIERS: Seismic risk

(U)  
(U)

The large dispersion of data for components of  
earthquake motion requires that the spread be  
appraised in design applications. Instrumental data  
also must be related to historic records of  
intensity. The near field and the far field  
contribute greatly to differences in peak motions.  
Site conditions, soil versus rock, affect duration.  
With these considerations, and with geological  
studies and the probability of recurrence, peak  
values can be specified from parameters of motions  
related to Modified Mercalli intensities. These  
peak values can be used for rescaling selected strong  
motion records or alternatively for the generation of  
synthetic seismograms. The procedure incorporates  
the wide variability in ground motions that have  
occurred during earthquakes. (Author)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A048 039 20/1  
ARMY MATERIALS AND MECHANICS RESEARCH CENTER WATERTOWN  
MASS

A Survey of Advanced Techniques for  
Acoustic Imaging.

(U)

DESCRIPTIVE NOTE: Final rept.,  
AUG 77 41P Smith, James M. ;  
REPT. NO. AMMRC-MS-77-7

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Acoustics, \*Images, \*Holography,  
\*State of the art, Image processing, Photographic  
processing, Thermal radiation, Optics, Surfaces,  
Deformation, Electronics  
IDENTIFIERS: \*Acoustic imaging, Holosonics, LPN-  
PRON-A1-6-P6350-AW-AW

(U)

(U)

This document is a state-of-the-art survey of  
advanced acoustic imaging techniques developed for  
nondestructive testing and medical applications.  
Several techniques are evaluated: simple  
mechanical scanning systems, array imaging, acoustic  
holography, synthetic aperture, Bragg imaging, and  
ray tracing. Examples of practical imaging systems  
that employ these techniques are described and  
compared, and in order to put these systems into  
proper chronological perspective, an appendix is  
included that briefly discusses older acoustic  
imaging techniques. (Author)

(U)



## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A047 484 20/4  
 MICHIGAN UNIV ANN ARBOR CAVITATION AND MULTIPHASE FLOW  
 LAB

Cavitation Damage Predicting Capability -  
 State of Art and Possibilities. (U)

AUG 77 35P Hammitt, F. G. ; De, M. K.

REPT. NO. UMICH-01456-23-1  
 CONTRACT: N00014-76-C-0697

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Cavitation. \*Cavitation noise,  
 \*Cavitation corrosion, Erosion, Fluid dynamics,  
 Hydrodynamics, Damage, Predictions, State of the  
 art, Bubbles (U)  
 IDENTIFIERS: \*Cavitation erosion efficiency,  
 WUNR062545 (U)

New results from cavitating venturi water tests are used to reinforce the concept of 'cavitation erosion efficiency', previously developed here from tests in a vibratory facility with both water and sodium. This concept emerges from a technique herein described to allow a priori prediction of eventual cavitation erosion rates in flowing machines. Bubble collapse pulse height spectra obtained from submerged microprobes are correlated with measured erosion rates in given laboratory and/or field devices to allow this prediction. Preliminary results from such correlations, along with other measurements of the effects of gas content, velocity, and cavitation condition upon 'mechanical' cavitation intensity as measured by the pulse height spectra, are here presented. New results from vibratory facility tests in tap water and synthetic sea water upon three materials of variable corrosibility (304 SS, 1018 carbon steel, and 1100-0 aluminum) are also presented. The ratio between maximum erosion rates for the salt and fresh water tests are found to increase toward unity as the mechanical cavitation intensity is increased, i.e., increased MDPR. This is expected on theoretical grounds. Finally, the relation between incubation period and maximum MDPR is examined from the vibratory test results, and found to depend upon the material properties as well as the fluid-flow conditions. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A047 197 20/5 17/2

GENERAL ELECTRIC CO PHILADELPHIA PA SPACE DIV

Low Repetition Rate Copper Vapor  
 Laser. (U)

DESCRIPTIVE NOTE: Final rept. Jun 76-May 77,  
 SEP 77 100P Anderson, Robert S. ; Homsey,  
 Robert J. ; Karras, Thomas W. ;  
 CONTRACT: N00014-76-C-0975

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Gas lasers, \*Metal vapors, \*Laser  
 communications, \*Underwater communications, Copper,  
 Visible spectra, Military requirements, Pulse  
 generators, Pulse rate, Repetition rate, Low rate,  
 Pulsed lasers, Brassboard models, State of the  
 art, Life tests (U)

The program has resulted in a significant advance in the state-of-the-art. A laser module was demonstrated at a PRF of 1.0 kHz with a 12.12 mJ per pulse output, which is a factor of 7 greater than the prior art. The laser was operated consistently at a PRF as low as 700 Hz. Analysis of experimental data for a range of tube diameters and PRF values show that output pulse energy scales linearly with the active lasing volume. Significantly, no physical limit to this volumetric scaling was observed during the program. It has been concluded that a laser system for producing greater than 50 mJ per pulse is feasible using two laser modules. A brassboard design can be assembled with moderate risk using electronic components within the present state-of-the-art. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A046 500 1/3 17/7  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIFA State-of-the-Art Assessment of Air Data  
Sensors for Naval Aircraft.DESCRIPTIVE NOTE: Master's thesis,  
SEP 77 176P Neil, Robert Dale ;

UNCLASSIFIED REPORT

DESCRIPTORS: \*Flight control systems, Naval aircraft, Navigation computers, Data transmission systems, Navigational aids, State of the art, Aircraft equipment, Jet fighters, Vertical takeoff aircraft, Short takeoff aircraft, Fly by wire control, Data displays, Theses

A review of current air data measurement techniques in Naval aircraft was conducted. Future requirements were identified for three classes of aircraft: conventional, fly-by-wire, and V/STOL. A survey of state-of-the-art air data sensors was performed based on information obtained from current literature, correspondence, and personal interviews with major government contractors, government agencies, and private companies. The major areas covered include pressure, airspeed, fiber optics, laser gyros, temperature, and fuel quantity. The basic operation of each system considered was presented and recommendation given based on its present stage of development and potential.

(Author)

(U)

(U)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A045 272 13/2 8/13  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG MISSEngineering Behavior of Pavement Materials:  
State of the Art.

DESCRIPTIVE NOTE: Final rept.,

FEB 77 414P Chou, Yu. T. ;

REPT. NO. WES-TR-S-77-9

CONTRACT: DOT-FA73WAI-377

PROJ: 4A762719AT04

MONITOR: FAA-RD 77-37

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with Federal Aviation Administration, Washington, DC. Systems Research and Development Service.

DESCRIPTORS: \*Pavements, \*Soil stabilization, Construction materials, Soil mechanics, Airports, Highways, Bituminous coatings, Concrete, Deformation, Fatigue (Mechanics), Cements, Limestone, Stress strain relations, State of the Art, Dynamic response

IDENTIFIERS: AST04, PE62719A

(U)

(U)

This report reviews the engineering behavior of pavement materials with respect to highway and aircraft loadings and environmental conditions. The materials covered are bituminous mixtures, portland cement concrete, granular materials, chemically stabilized soils, and fine-grained soils. Basic properties of each are discussed. Factors influencing engineering properties and properties of stabilized soils with respect to strength, modulus, and fatigue are discussed. For fine-grained subgrade soils, discussions also concentrate on the resilient and plastic properties. Constitutive stress-strain relations are presented with respect to resilient, static, viscoelastic, plastic, dynamic, and shear properties. The modulus of subgrade reaction used in rigid pavements and the nature of expansive soils in relation to rigid pavement design are discussed.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A044 652 20/11  
NATIONAL MATERIALS ADVISORY BOARD (NAS-NAE) WASHINGTON D  
C

Control of Fretting Fatigue.

(U)

DESCRIPTIVE NOTE: Final rept.

77 97P

REPT. NO. NYAB-333

CONTRACT: MDA903-74-C-0167

UNCLASSIFIED REPORT

DESCRIPTORS: \*Fretting, \*Fatigue(Mechanics),  
\*Friction, \*Coatings, State of the art, Test  
methods, Control, Crack propagation,  
Fracture(Mechanics), Corrosion, Wear,  
Lubrication, Surfaces, Films, Bibliographies

(U)

The state of the art of fretting and available  
fretting-initiated fatigue tests are assessed.  
Recommendations focus on a program of research  
designed to improve understanding of fretting-  
initiated fatigue mechanisms and on aspects of  
evaluation. Guidelines for use by designers to  
circumvent the development of fretting also are  
described. An extensive review of the literature is  
included as is a 210-item bibliography.  
(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A044 601 13/2 8/1  
MISSISSIPPI STATE UNIV MISSISSIPPI STATE

Estimate of Maximum Level of Oil Innocuous  
to Marine Biota as Inferred from Literature  
Review.

(U)

DESCRIPTIVE NOTE: Final task rept.,

APR 77 20P Brown, Lewis Raymond :

CONTRACT: DOT-CG-81-76-1476

MONITOR: CGR/DC,USCG 9/77,D-43-77

UNCLASSIFIED REPORT

DESCRIPTORS: \*Oil pollution, \*Marine biology,  
Toxicity, Crude oil, Lethal dosage, Literature  
surveys, Bibliographies, Crustacea, Damage  
assessment, Oil spills, State of the art,  
Lethality, Kill probabilities

(U)

The objective of this study was to derive an  
estimate of the maximum level of oil which can be  
considered harmless to the marine biological  
community based on the current state-of-the-art as  
determined through review and interpretation of the  
literature. Overall nearly 2,000 individual  
articles relating to oil pollution were examined.  
One hundred and thirty-five of the most germane of  
these articles are listed as references.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A044 584 8/10  
MAR INC ROCKVILLE MDA Survey and Assessment of the Navy's  
Oceanographic Instrumentation Needs.

(U)

DESCRIPTIVE NOTE: Final rept.,

AUG 77 48P Hesselbacher, Thomas H. ; Pierre, Leslie J. ;

REPT. NO. MAR-TR-189

CONTRACT: N00014-77-C-0186

UNCLASSIFIED REPORT

DESCRIPTORS: \*Oceanographic equipment,

\*Instrumentation. \*Surveys. State of the art.  
Assessment, Measurement. Naval research, Weapon  
systems, Detectors, Temperature, Salinity, Water  
quality, Artificial satellites, Ocean currents,  
Remote systems, Ocean surface

(U)

A survey program was conducted to identify the Navy's oceanographic measurement needs which are not being met by currently available instrumentation. The scope of the survey, as dictated by funding limitations and a quick response requirement, was limited to measurements needed to support ongoing Navy programs related to sensor and weapon systems as opposed to measurements needed for general oceanographic research. The survey also included a summary of the state-of-the-art capabilities of current oceanographic instrumentation. A number of instrumentation needs have been identified which are receiving inadequate attention and/or support.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A043 951 13/1 10/1 3/2  
LITTLE (ARTHUR D) INC CAMBRIDGE MASS

Solar Air - Conditioning Study.

(U)

DESCRIPTIVE NOTE: Final rept.,

APR 77 149P Merriam, Richard ;

REPT. NO. ADL-C-79679

CONTRACT: N68305-76-C-0029

PROJ: F57571

TASK: ZF57571001

MONITOR: CEL CR-77-018

UNCLASSIFIED REPORT

DESCRIPTORS: \*Air conditioning equipment, \*Solar energy, \*Energy conversion, Cooling and ventilating equipment, State of the art, Life cycle costs, Heat transfer coefficients, Rankine cycle, Desiccants, Dehumidifiers, Refrigerants, Storage, Silica gel, Solar collectors, Buildings, Climate, Heat pumps

IDENTIFIERS: PE62765N

(U)

(U)

The state-of-the-art of solar cooling is evaluated to determine the near term performance potentials and life-cycle costs of the most promising approaches. The heat actuated absorption cycle, Rankine cycle, and desiccant dehumidification cycle are examined. The principles of operation are described, performance coefficients are reviewed, operating constraints are examined, and the commercial status of each approach is evaluated. An analysis of the major solar cooling demonstrations (as of 1976) is carried out. Savings-to-investment ratios are calculated for solar cooling systems in buildings in seven locations within the United States. (Author)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A043 826 20/4 1/3  
DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
BETHESDA MD AVIATION AND SURFACE EFFECTS DEPT

An Assessment of Circulation Control  
Airfoil Development. (U)

DESCRIPTIVE NOTE: Research and development rept. Jul 75-  
Sep 76, AUG 77 53P Wilkerson, Joseph B. ;

REPT. NO. Aero-1238  
MONITOR: DTNSRDC 77-0084

UNCLASSIFIED REPORT

DESCRIPTORS: -Airfoils, \*Boundary layer control,  
\*Circulation, Two dimensional flow, High lift,  
Wind tunnel tests, Mach number, Criticality,  
Pressure distribution, Aerodynamic configurations,  
Trailing edges, Rotor blades (Rotary wings),  
Helicopter rotors, Augmentation, State of the a  
IDENTIFIERS: DES3203N, WU11619200 (U)  
(U)

A circulation control (CC) airfoil development program is presented, including an airfoil designation system. Specific performance objectives are set forth as development goals. Background information includes an assessment of state-of-the-art design practices, a comparison of operational requirements with those of conventional airfoils, and a discussion of previous airfoil performance. Selection and design criteria are described for five new CC airfoils. These designs were wind tunnel evaluated as two-dimensional models and a limited amount of airfoil data is shown for comparison to the prior data base. Two of the airfoils were designed with the objective of maintaining high lift augmentation and improving the critical Mach number characteristics, a combination of qualities that was previously nonexistent. Both designs theoretically accomplished the prescribed goals and were validated by experimental results. The development program has advanced the state of the art and nearly doubled the available data base for CC airfoils. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A043 737 13/7 9/5  
HARRY DIAMOND LABS ADELPHI MD

Proceedings of the Fluidic State-of-the-Art  
Symposium Held at Naval Surface Weapons  
Center, White Oak, Md on 30 September - 3  
October 1974. Volume VI. (U)

74 289P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 5, AD-787 550.

DESCRIPTORS: \*Fluidics, \*Fluerics, \*Flueric  
devices, Computer aided design, Fluid amplifiers,  
Fluidic control, Bistable devices, Vortices,  
Coanda effect, Feedback, Fabrication, Quality  
control, Meetings, State of the art  
IDENTIFIERS: Proportional amplifiers (U)  
(U)

This volume contains that part of the HDL  
Fluidics State-of-the-Art Symposium  
Proceedings that for one reason or another could  
not be published prior to the symposium. Emphasis  
is on discussions after each paper was given. (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A043 632 20/6 14/2 15/7  
 HUGHES AIRCRAFT CO CULVER CITY CA DISPLAY PRODUCTS  
 DEPT

Diffraction Optics Study.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Mar-30 Sep 76,  
 JUN 77 225P Lewis, W. N. : Close, D. H.  
 ; Cook, L. G. ; Jacobs, R. S. ;  
 CONTRACT: F33615-76-C-0508  
 PROJ: 7184  
 TASK: 04  
 MONITOR: AMRL TR-76-119

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Holography, \*Display systems,  
 \*Diffraction, Optics, Helmet mounted displays,  
 Head up displays, Canopies, Visors, Data  
 displays, Fighter aircraft, Lasers, Test and  
 Evaluation, Computer applications, Weapon  
 delivery, Target acquisition, Effectiveness,  
 Mission profiles, Simulation, Tactical analyses,  
 Feasibility studies, State of the art  
 IDENTIFIERS: WUAMRL71840448, PE62202F

(U)

A study has been conducted to determine the  
 feasibility of extending the information display  
 capability in a modern fighter aircraft through the  
 employment of diffraction optics techniques.  
 Baseline concepts were designed using (1)  
 reflective holographic optical elements on the  
 aircraft canopy and (2) transmissive holographic  
 optical elements on the operator's flight helmet  
 visor. Evaluation of these systems performance by  
 computer was conducted. State-of-the-art surveys in  
 holographic technology, image sources and materials  
 technology are presented. The impact of future  
 advances in the state of the art on the feasibility  
 of these systems is discussed. Requirements for the  
 extended display technology are formulated, using  
 simulated encounter and mission analysis data.  
 (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A043 581 17/9 9/1  
 ARMY MISSILE RESEARCH AND DEVELOPMENT COMMAND REDSTONE  
 ARSENAL ALA ADVANCED SENSORS DIRECTORATE

Millimeter and Submillimeter Wave  
Receivers.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
 JUL 77 50P Waldman, Jerry ;  
 REPT. NO. DRDMI-TE-77-17  
 PROJ: 1L362303A214

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Radar receivers, \*Superheterodyne  
 receivers, Millimeter waves, Submillimeter waves,  
 Schottky barrier devices, State of the art,  
 Demodulators, Microwave receivers, Radio  
 astronomy, Solid state electronics,  
 Microelectronics, Lasers  
 IDENTIFIERS: AS214, PE62303A

(U)

(U)

This report reviews the current state-of-the-art  
 performance figures for millimeter and submillimeter  
 wave detectors and receiver systems. The frequency  
 range under consideration is roughly 100 to 600  
 GHz. In contrast to the microwave (and  
 optical) region where detectors perform close to  
 the ideal limit, present millimeter and submillimeter  
 wave detector sensitivities are one to two orders of  
 magnitude away from the ideal. This situation does  
 not represent any fundamental limitation but rather  
 reflects technological problems in detector and  
 source development peculiar to this region of the  
 spectrum. At the present time, rapid technological  
 progress is occurring as a consequence of (1) the  
 demand from fields such as radio astronomy, fusion  
 diagnostics, and high resolution radar, and (2)  
 the breakthroughs in microelectronic techniques,  
 ultra-high frequency solid-state sources, tubes, and  
 lasers. These developments are reviewed and the  
 implications for millimeter wave radar systems are  
 discussed. (Author)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A043 344

6/19

WAYNE STATE UNIV DETROIT MICH BIOMECHANICS RESEARCH CENTER

Survey of the State of the Art of Human Biodynamic Response.

(U)

DESCRIPTIVE NOTE: Technical rept.,

MAR 77 19P

King, Albert I.; Tennyson,

S. A.;

REPT. NO. TR-7

CONTRACT: N00014-75-C-1015

## UNCLASSIFIED REPORT

Availability: Pub. in Mathematical Modeling Biodynamic Response to Impact, p31-44 n.d.

DESCRIPTORS: \*Biodynamics, \*Acceleration tolerance, Impact acceleration, State of the art, Humans, Spinal column, Mathematical models, Kinematics, Biomechanics, Electromyography, Reprints

IDENTIFIERS: WUNR064524

(U)

(U)

A biodynamic model of the spine simulated the action of spinal musculature on the head, vertebral bodies and pelvis in the midsagittal plane. Muscle was treated as a force generator whose contractile force was dependent on muscle stretch, stretch rate and neural delay time. Eight model runs were conducted with and without muscle, simulating + G(z) and -G(x) impact acceleration. The model predicted that spinal musculature was incapable of affecting overall spinal column kinematics. However, as a result of muscle contraction, significantly higher local axial forces were predicted in the discs and facets than were predicted when muscle was absent. (Author)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A042 981

13/9 9/2

SKF INDUSTRIES INC KING OF PRUSSIA PA RESEARCH LAB

Computer Program Operation Manual on SHABERTH. A Computer Program for the Analysis of the Steady State and Transient Thermal Performance of Shaft-Bearing Systems.

(U)

DESCRIPTIVE NOTE: Technical rept.,

JUL 76 246P

Crececius, W. J.; Pirvics,

J.;

REPT. NO. AL76P030

CONTRACT: F33615-76-C-2061

MONITOR: AFAPL TR-76-90

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Shafts (Machine elements), \*Roller bearings, \*Computer programs, \*Programming manuals, Performance (Engineering), Thermal properties, Mapping, Steady state, Transients, Lubrication, Deflection, Heat transfer, Elastic properties, Hydrodynamics, Boundary layer, State of the art, Mathematical models

IDENTIFIERS: SHABERTH computer program

(U)

(U)

This report is a self contained manual describing an advanced state-of-the-art analytical computer program (SHABERTH) for the study of steady state and transient thermal performance of rolling element bearing and shaft systems. This program embodies mathematical models describing the role of the lubricant in bearing behavior. Descriptions of these models are set forth along with a detailed description of the program organization method of solution and convergence criteria. Input data preparation forms and program output are discussed and examples are included. (Author)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A042 787 11/6 14/2  
NATIONAL BUREAU OF STANDARDS WASHINGTON D C

Improved Ultrasonic Standard Reference Blocks.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jan 74-31 Dec 75,  
APR 77 134P Sushinsky, G. F.; Eitzen, D.  
G.; Chwirut, D. J.; Bechtoldt, C. J.; Ruff,

A. W.;  
REPT. NO. NBSIR-76-984  
CONTRACT: F33615-74-M-6752  
PROJ: 7381  
TASK: 07  
MONITOR: AFML TR-77-40

UNCLASSIFIED REPORT

DESCRIPTORS: \*Aluminum alloys, \*Steel, \*Titanium alloys, \*Ultrasonic tests, \*Nondestructive testing, State of the art, Standards, Standardization  
IDENTIFIERS: PE62102F (U)

A program to improve the quality, reproducibility and reliability of nondestructive testing through the development of an improved ASTM-type ultrasonic reference standards system is described. Reference blocks of aluminum, steel, and titanium alloys are considered. Equipment representing the state-of-the-art in laboratory and field ultrasonic equipment was obtained and evaluated. RF and spectral data on twenty-two sets of ultrasonic reference blocks were taken as part of a task to quantify the variability in response from nominally identical blocks. Techniques for residual stress, preferred orientation, and microstructural measurements were refined and applied to reference blocks rejected by manufacturers during fabrication in order to evaluate the effect of metallurgical condition on block response. The effects of certain dimensional variables on block response were studied and new fabrication techniques considered. A study of the effects of measurement system variables on block response was carried out. A calibration service for ASTM E127-type reference blocks has been established and the development of a loaner service for calibration blocks is underway. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A042 463 21/2 21/5  
ROCKET RESEARCH CORP REDMOND WASH

Hydrazine-Fueled Aircraft Starter Feasibility Demonstration.

(U)

DESCRIPTIVE NOTE: Final rept. 30 May 75-31 Mar 77,  
MAR 77 150P Jorgenson, W. E.; Schmitz, B.;

CONTRACT: F33615-75-C-2027  
PROJ: 3145  
TASK: 01  
MONITOR: AFAPL TR-77-16

UNCLASSIFIED REPORT

DESCRIPTORS: \*Engine starters, \*Jet engines, \*Hydrazine, Cartridges (PAD), Monopropellants, Gas generating systems, Thermal properties, Decomposition, Test methods, Performance (Engineering), State of the art, Feasibility studies  
IDENTIFIERS: MXU-4A/A engine starters, PE62203F, WUAFAPL31450129 (U)

The purpose of this program was to determine the feasibility of converting an aircraft jet engine starter that is normally powered with an 8Lbm solid propellant cartridge (type MXU4A/A), to an equivalent liquid monopropellant-fueled device utilizing state-of-the-art hydrazine technology, the single most difficult development constraint being that the complete hydrazine system must package within the space normally occupied by the MXU4A/A. A solid propellant cartridge in the starter breech. The feasibility of packaging a hydrazine fueled cartridge in the existing solid propellant breech volume and meeting performance requirements was successfully demonstrated using a breadboard hydrazine system in conjunction with actual cartridge starter hardware. (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A042 121 14/2 13/9  
TRW DEFENSE AND SPACE SYSTEMS GROUP REDONDO BEACH  
CALIF

Advanced High Speed Roller Bearing  
Inspection Techniques.

DESCRIPTIVE NOTE: Final rept. 30 Oct 76-1 Apr 77.  
MAY 77 80P Jacoby, Jerald L. ; Bohn,

Jack R. ;  
CONTRACT: F33615-76-C-2147  
PROJ: 3048  
TASK: 06  
MONITOR: AFAPL TR-77-32

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Test equipment, \*Roller bearings,  
Inspection, Automation, Microcomputers, Cost  
effectiveness, State of the art, Technology,  
Sizes (Dimensions), Measurement, Precision,  
Preparation, Sorting, Quality control,  
Tolerances (Mechanics), Test methods, Turbine  
parts, Turbofan engines, High velocity, Optical  
equipment, Pneumatic devices, Electronic equipment,  
Off the shelf equipment, Probes, Transducers  
IDENTIFIERS: F-100 engines, Design,  
WUAFAPL30480695, PE62203F

A comprehensive survey of state-of-the-art  
precision measurement techniques applicable to  
dimensional inspection of rollers for high speed  
bearings (greater than 2.0 million DN) was  
undertaken. Particular attention was given to  
noncontacting techniques which would permit automated  
100% inspection of the rollers for use in such  
bearings. The measurement techniques were evaluated  
to determine their utility for incorporation into  
cost-effective roller inspection system. A concept  
for a fully automated roller inspection system is  
described. It provides for the preparation,  
inspection, re-oiling and sorting of the rollers with  
minimal human supervision. The system is conceived  
to be self-contained so that it can operate  
independent of environmental constraints. It can be  
developed by adapting existing technology to the  
specific requirements for roller inspection.  
(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A041 798 9/2 14/1  
DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA

Interactive Computer Graphics: A  
Responsive Planning and Control Tool for  
DoD Program Management.

DESCRIPTIVE NOTE: Research rept.,  
JAN 77 56P Callahan, Joseph E. ;  
Roberson, Carlton F. ; Perino, George H. , Jr. ;  
REPT. NO. DSMC-RR-77.1

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Interactive graphics, \*Management  
planning and control, \*Executive routines, \*Cost  
analysis, Networks, Computer programs, Pert,  
Cathode ray tube screens, Display systems,  
Computer applications, Department of defense,  
State of the art, Feasibility studies  
IDENTIFIERS: \*Program management

(U)  
(U)

This report summarizes the methodology, conduct and  
findings of the Defense Systems Management  
College (DSMC) research study of Interactive  
Computer Graphics (ICG) as a tool for program  
management planning and control. The study was  
conducted in four phases to meet four objectives:  
to determine the feasibility of representing and  
interrogating a program/project network on a graphics  
console; to determine the feasibility of developing  
an Interactive Computer Graphics Networking  
System (ICGNS) software prototype for program  
management planning and control; to examine the  
affordability of implementing an ICGNS in the  
PMO; and to assess the state-of-the-art in industry  
and DoD regarding existing and/or proposed ICG  
managerial applications.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A041 262 5/2 14/2  
SOUTHWEST RESEARCH INST SAN ANTONIO TEXNondestructive Testing Information Analysis  
Center, 1976. (U)DESCRIPTIVE NOTE: Annual technical rept. 15 Feb 76-15  
Feb 77.JUN 77 32p Bradshaw, W. W. ; Hicks, F.  
P. ; King, R. R. ; Smith, R. T. ;  
REPT. NO. SARI-15-3903(3)  
CONTRACT: DSA900-74-C-5268

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Nondestructive testing. \*Information  
systems. \*Information centers. Information  
retrieval. Data bases. State of the art (U)

During the contract year, a total of approximately 12,000 entries has been reached in NTIAC's computerized data file records. The NTIAC Newsletter has a distribution of approximately 3,000 recipients. A State-of-the-Art Survey on Advanced Ultrasonic Testing Systems was published. NTIAC responded to over 100 technical inquiries. (Author) (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A040 959 9/4  
EDUCATIONAL TESTING SERVICE PRINCETON N JApplication Description and Evaluation for  
NLS. (U)JUL 76 31P Potter, David A. ;  
REPT. NO. ETS-3  
CONTRACT: MDA903-74-C-0290, ARPA Order-2651

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Information processing. \*On line  
systems. Information retrieval. Production control,  
Documents, Text processing, Editing, Man machine  
systems, Computer applications, Cost effectiveness,  
User needs, State of the art (U)

NLS (On-Line System) is a text-editing, dialog-support, and communications system which provides users with a state-of-the-art tool for document production, communication, and information management and retrieval. This paper reviews the history of NLS at one site, and indicates the range of potential uses for the tools inherent to NLS. These uses were primarily for correspondence, document production, and information management. An informal evaluation is the second major part of this report. It concentrates on users' impressions of the system's utility, ease of access, and factors which might impede acceptance. Sample products and a discussion of office automation conclude the report. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A040 941 13/10  
GENERAL DYNAMICS CORP QUINCY MASS QUINCY SHIPBUILDING  
DIV

Review of Ship Structural Details. (U)

DESCRIPTIVE NOTE: Final technical rept.,  
77 327P Glasfeld, R.; Jordan, D.;  
Kerr, M., Jr.; Zoller, D.;  
CONTRACT: N00024-74-C-5230  
MONITOR: SSC 266

UNCLASSIFIED REPORT

DESCRIPTORS: \*Ship structural components,

\*Shipbuilding, \*Ship hulls, Ship design,  
Merchant vessels, Cargo ships, State of the art,  
Structural analysis, Marine engineering,  
Shipyards, Labor, Cost estimates, Manpower,  
Structural members, Strength (Mechanics),  
Girders, Failure (Mechanics), Structural  
mechanics, Damage, Fatigue (Mechanics),  
Tankers, Liquefied natural gas  
IDENTIFIERS: Naval architecture (U)  
(U)

This review of structural detail design is intended to serve as a summary of the state of the art and a guide to development of tools for design and analysis of these details. It includes a count of common structural details aboard two modern commercial vessels, and labor estimates for representative sizes of those details intended to provide a total cost per type of detail ranking for those ships. Current shipyard practice is reported with sketches and application description of about 160 ship structural details. Design improvements related to shipyard producibility are suggested. The most relevant rules promulgated by technical and classification societies are excerpted, and comparison of rules is illustrated by application to specific examples. Damage induced by poor design or fabrication of details is reviewed and illustrated. The relatively sparse technical literature related to analysis and design of structural details is summarized. A framework for fatigue criteria is developed as a suggestion for possible detail strength criteria. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A040 870 8/11  
MACKAY SCHOOL OF MINES RENO NEV

State-of-the-Art for Assessing Earthquake Hazards in the United States. Report 6. Faults and Earthquake Magnitude. (U)

DESCRIPTIVE NOTE: Miscellaneous paper,  
MAY 77 170P Stenmons, David B.;  
REPT. NO. WES-MP-S-73-1-6  
CONTRACT: DACW39-76-C-0009  
MONITOR: WES MP-S-73-1

UNCLASSIFIED REPORT

DESCRIPTORS: \*Earthquakes, \*Forecasting,  
\*Earthquake engineering, Correlation techniques,  
Hazards, Faults (Geology),  
Strength (General), Threat evaluation,  
Probability, Folds (Geology), Tectonics,  
Earthquake resistant structures, State of the art (U)

The short seismologic and historic records, in combination with the long recurrence intervals between potentially damaging earthquakes, create a need for developing geologic methods as alternatives or supplements to seismologic methods of establishing design earthquakes. The main goal of this report is to review geologic methods of determining the maximum probable earthquakes for active faults based on empirical relationships between magnitude, length of surface faulting, maximum fault displacement, and combinations of fault length and maximum displacement. (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A040 436 9/5 20/1  
TRW DEFENSE AND SPACE SYSTEMS GROUP REDONDO BEACH  
CALIF

Advanced Surface Acoustic Wave (SAW)  
Oscillator Investigation.

DESCRIPTIVE NOTE: Final rept. 1 Feb 76-1 Feb 77.

APR 77 55P

CONTRACT: N00123-76-C-0588

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Oscillators, \*Acoustic waves,  
\*Surface waves, Acoustic equipment, Advanced  
systems, Ultrahigh frequency, Acoustic delay lines,  
Fabrication, Thermal properties,  
Loading(Electronics), Fabrication,  
Aging(Materials), Life tests, Cyclic tests,  
State of the art

(U)

This report describes the results of the development, fabrication, evaluation, and test performed on Advanced Surface Acoustic Wave (SAW) Oscillators. The main purpose of the SAW oscillator program was the fabrication and characterization of SAW oscillators operating at 250 MHz, 500 MHz, and 1 GHz. As the data presented shows, the performance of these oscillators closely approaches or exceeds the current state-of-the-art in nearly every respect.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A039 464 1/2 12/2  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

Decision-Making and Optimization in Aircraft Design,

(U)

FEB 77 63P Haupt,Ulrich ;  
REPT. NO. NPS-67Hp77021A

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Aeronautical engineering, \*Decision making, Optimization, Parametric analysis, Computer aided design, Reliability, Maintainability, Operational effectiveness, Trade off analyses, Life cycle costs, State of the art  
IDENTIFIERS: \*Aircraft design

(U)

(U)

The state of the art in aircraft design is surveyed with regard to the decision-making process. It is shown that the empirical approach to decision-making as it is generally practiced in hardware design has inherent limitations. There is an increasing need to consider uncertainties and preferences explicitly. This leads to a new design outlook combining the experience of old-time designers with an analytical approach to complex problems. An outline is given for the development of practice-oriented text material as a most essential step toward preparing engineers for new tasks in design and decision-making. (Author)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A039 096 13/2 13/3  
HALLIBURTON SERVICES DUNCAN OKLA

Placement of Concrete in the Ocean.

(U)

DESCRIPTIVE NOTE: Final rept..

DEC 76 64P Evans, George W. ; Herndon,

Joe ;

CONTRACT: N68305-76-C-0038

PROJ: S4636X

MONITOR: CEL CR-77.006

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Concrete, \*Underwater structures,  
Ocean bottom, Oil wells, Deep water, Underwater  
construction, State of the art, Pumping, Slurries,  
Grout

(U)

IDENTIFIERS: Tremie concrete, WU316101,

(U)

PE63713N

This report presents state-of-the-art and proposed methods of concrete placement in the ocean to depths of 20,000 feet. Current technology includes bucket, tremie pipe, pumping, preplaced aggregate and bagged concrete methods as well as oil field cementing techniques. Problem areas, limitations and deficiencies of the current technology are discussed. Five new concepts of ocean concrete placement are presented and evaluated, most of which are variations of the current tremie method or bucket placement. Recommendations are made for research on materials and their properties, test methods, control devices and guidance systems for placement. A comprehensive bibliography is included.

(U)

(Author)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 814 9/5  
ROME AIR DEVELOPMENT CENTER GRIFFISS AFB N YA Survey of Antenna Array Technology for  
Surveillance Systems.

(U)

DESCRIPTIVE NOTE: Final rept..

FEB 77 32P Gregorich, Walter S. ;

REPT. NO. RADC-TR-76-409

PROJ: 9361

TASK: 07

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Antenna arrays, Antenna feeds,  
Broadband, State of the art, Lens antennas,  
Planar structures, Bibliographies

(U)

IDENTIFIERS: WURADC93610701

(U)

This report acquaints the reader with a survey of the latest state-of-the-art technology that may be applicable to various types of ground signal collection systems. An overview of the performance parameters of both planar and lens fed arrays is presented. An extensive bibliography is a key feature of this report. (Author)

(U)



## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 748 5/9  
SENSORS DATA DECISIONS INC SAN DIEGO CALIFComputerized Collective Training for  
Teams.

(U)

DESCRIPTIVE NOTE: Interim rept. 30 Aug-13 Nov 76,  
FEB 77 62P Kribs,H. Dewey ;Thurmond,  
Paul ;Mark,Linda ;  
CONTRACT: DAHC19-76-C-0042  
PROJ: 2Q762722A764  
MONITOR: ARI TR-77-A4

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Computer aided instruction.  
\*Teams(Personnel). Military training. State of  
the art. Systems approach. Teaching methods.  
Learning. Decision making. Memory(Psychology  
IDENTIFIERS: PE62722A, AS764

(U)  
(U)

A review and evaluation was conducted of state-of-the-art findings and instructional theory directly applicable to the problem of developing instructional strategies for computer-assisted team training. Two major conclusions were drawn from the review and evaluation. The first is that a conceptual framework for a general purpose set of instruction strategies for team training does not exist. The second conclusion is that an instructional Systems Development (ISD) approach must be developed for team training. The paper also describes the initial development for deriving team training instructional strategies.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 621 15/7 12/1  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIFDesign Considerations for Lanchester-Type  
Models of Warfare (LATMW).

(U)

DESCRIPTIVE NOTE: Master's thesis,  
SEP 76 135P Maurer,H,Herbert-Hans ;  
UNCLASSIFIED REPORT

DESCRIPTORS: \*Lanchester equations, \*Mathematical models, Army operations, Combat areas, War Games, Tactical warfare, State of the art, Theses, Attrition, Computerized simulation, Trade off analyses

(U)

This thesis discusses design considerations for Lanchester-Type Models of Warfare (LATMW). It establishes a framework for setting minimum design standards for such combat models. The state-of-the-art for models is briefly reviewed and major pitfalls in modelling combat are sketched. Modern combined arms forces are abstracted as coherent systems of complementary and supplementary components. A method is derived to refine Lanchester Attrition-Rate Coefficients (LARC) as system capability measures by additionally considering reliability and availability weightings. Examples are given to demonstrate the implementation of these refined LARC quantifications in LATMW.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 590 13/7 13/10 20/4  
DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
BETHESDA MD SHIP PERFORMANCE DEPT

Hydrodynamic Performance of the Model of a  
Variable Area Waterjet Inlet Designed for a  
200 Ton, 100 Knot Hydrofoil Ship,

(U)

FEB 77 91P Sobolewski, Alan D. ;  
REPT. NO. SPD-735-01  
PROJ: S3246, F43270  
TASK: S324613, SF43270201

UNCLASSIFIED REPORT

DESCRIPTORS: \*Hydraulic jets, \*Inlets,  
\*Hydrodynamics. High velocity, Hydrofoil craft,  
Cavitation, Struts, Hydrofoils, Pressure,  
Recovery, Performance(Engineering), Computer  
programs, State of the art, Experimental design,  
Test methods, Water tunnels, Scale models,  
Pressure distribution, Drag  
IDENTIFIERS: WJ7857, PE62543N,  
PE63508N

(U)

(U)

The primary objective of this study was to assess  
the state-of-the-art in waterjet inlet design  
capability for high-speed hydrofoil applications. A  
contract was let for the design of a variable-area,  
strut-pod inlet for the waterjet propulsion system of  
a 200 ton, 100 knots hydrofoil ship. A basic  
requirement of the design was that the inlet must  
provide cavitation-free operation for prescribed  
flow-rates at both the 100 knots cruise and 35 knots  
take-off speed. The most up-to-date design  
procedures and performance prediction techniques were  
to be used.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 505 5/9  
HUMAN RESOURCES RESEARCH ORGANIZATION ALEXANDRIA VA

Team-Training and Evaluation Strategies:  
State-of-the-Art.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
FEB 77 53P Wagner, Harold ; Hibbits, Nancy  
; Rosenblatt, Richard D. ; Schulz, Russel ;  
REPT. NO. HUMRO-TR-77-1  
CONTRACT: MDA903-76-C-0210, ARPA Order-3187

UNCLASSIFIED REPORT

DESCRIPTORS: \*Teaching methods,  
\*Teams(Personnel), \*Military training,  
Military doctrine, Policies, Group dynamics,  
Behavior, Skills, Classification, Feedback,  
Efficiency, Assessment, Simulation, Simulators,  
Flight simulators, Test methods, Education,  
Instructions, State of the art  
IDENTIFIERS: \*Team training

(U)

(U)

A critical review and evaluation of the literature  
was performed to describe existing instructional and  
evaluative techniques relevant to team training.  
Comprehensive documentation sources such as  
Educational Resources Information Center  
(ERIC), Defense Documentation Center (DDC),  
and National Technical Information Service  
(NTIS) were searched. In addition, the social  
psychological areas and the industrial training field  
were surveyed for relevant publications. Current  
studies and team training practices underway within  
the Services were examined and described. A  
classification scheme was introduced in which the  
training situations discussed in this review were  
categorized as either emergent or established.  
Established situations are those in which the tasks  
and required behaviors can be almost completely  
specified. Emergent situations permit some  
discretionary behaviors because all activities cannot  
be predicted. Additionally, team training was  
distinguished from multi-individual training.  
Although both occur in a group setting, the focus  
in the latter is on individual skills whereas team  
training focuses on team skills (e.g.,  
coordination). Using this classification scheme,  
state-of-the-art gaps in team training and evaluation  
were identified for needed research and development.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 409 14/2  
 GENERAL ELECTRIC CO PLEASANTON CALIF VALLECITOS NUCLEAR  
 CENTER

Advanced Mass Spectrometer. (U)

DESCRIPTIVE NOTE: Final rept. 17 Jan 72-31 Oct 76,  
 JAN 77 105P Halliday,Fred ;Stein,John  
 D. ;  
 REPT. NO. NEDG-12045-245  
 CONTRACT: F33657-72-C-0484, ARPA Order-1702

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Mass spectrometers, Advanced systems,  
 State of the art, Ion sources, Ion beams,  
 Microprobes, Multichannel, Magnetic separation,  
 Heterogeneity, Variations, Computer applications,  
 Acceptance tests (U)

The Advanced Mass Spectrometer (AMS) is a  
 state-of-the-art ion microprobe with fine primary ion  
 beam focus and a unique mass spectrometer. A  
 variable inhomogeneity magnet system, with 288  
 detectors, all serviced by computer data handling,  
 provides the heart of an instrument which can monitor  
 from mass 17 to 304 amu simultaneously. The AMS  
 has been integrated and has undergone acceptance  
 tests which delineate the instrument's initial  
 operating parameters. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 192 1/3 20/1  
 KAMAN AEROSPACE CORP BLOOMFIELD CONN

Helicopter Noise Reduction Design Trade-Off Study. (U)

DESCRIPTIVE NOTE: Final rept. Mar 76-Jan 77,  
 JAN 77 252P Bowes,Michael A. ;  
 REPT. NO. R-1493  
 CONTRACT: DOT-FA76WA-3791  
 MONITOR: FAA-AEQ 77-4

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Helicopters, \*Aircraft noise, \*Noise  
 reduction, Aircraft engine noise, Helicopter rotors,  
 Helicopter engines, Performance(Engineering),  
 Experimental design, Performance(Engineering),  
 Modification, Trade off analyses, Cost analysis,  
 State of the art, Cost benefits (U)

A study was performed to determine the noise  
 reduction benefits and economic costs associated with  
 applying state-of-the-art noise reduction methods to  
 future design civil helicopters. As part of this  
 study, a survey of the make-up of the civil fleet was  
 performed, and this fleet make-up was projected to  
 the 1980 time frame. Analytical methods were  
 developed and/or adopted for calculating helicopter  
 component noise, and these methods were incorporated  
 into a unified total vehicle noise calculation model.  
 Analytical methods were also developed for  
 calculating the effects of noise reduction  
 methodology on helicopter design, performance and  
 cost. The analytical methods were used to  
 calculate baseline noise and cost characteristics of  
 several existing civil helicopters. These methods  
 were also used to calculate changes in noise, design,  
 performance and cost due to the incorporation of  
 engine and main rotor noise reduction methods. All  
 noise reduction techniques were evaluated in the  
 context of an established mission performance  
 criterion which included consideration of hover  
 ceiling, forward flight range/speed/payload and rotor  
 stall margin. (Author) (U)



## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 126 20/2  
ARMY ELECTRONICS LABS FORT MONMOUTH N J

## Crystal Resonators.

JUL 74 18P Hafner, Erich ;

## UNCLASSIFIED REPORT

Availability: Pub. in IEEE Transactions on  
Sonics and Ultrasonics, vSU-21 n4 p220-237 Oct  
74.DESCRIPTORS: \*Quartz resonators, \*Piezoelectric  
crystals, Frequency, Control, Stability, State  
of the art, Problem areas, Elastic properties,  
Thermal properties, Reprints

(U)

This review attempts to present a broad-brush picture of the present state of the art of crystal resonators. It considers primarily, the theoretical point of view and leaves the very extensive subject of crystal resonator technology, which includes the problem of frequency stability, as the subject of another article.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 088 13/2  
LITTLE (ARTHUR D) INC CAMBRIDGE MASS

## State-of-the-Art Survey of Land Reclamation Technology.

(U)

DESCRIPTIVE NOTE: Final rept. Jun 75-Jun 76,  
MAY 76 98P Berkowitz, J. B. ; Harrison,  
J. E. ; Huska, P. A. ; Johnson, S. L. ;  
O'Brien, P. J. ;  
CONTRACT: DAAA15-75-C-0188  
MONITOR: EC CR-76076

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Reclamation, \*Decontamination,  
\*Soils, State of the art, Ground water,  
Trenching, Water wells, Sanitary engineering,  
Contamination, Vegetation, Inoculation,  
Degradation, Excavation, Activation, Chemical  
reactions

(U)

This report focuses on absolute removal of contaminants from soil. A combination of downgradient ground and surface water collection and treatment with soil activation is recommended. The first method aims at eliminating leaching to ground (surface) water. The second stimulates natural degradation processes by way of soil activation. One method works on low-lying contaminants, the other works on the upper foot of soil.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 058

PURDUE UNIV LAFAYETTE IND PURDUE LAB FOR APPLIED INDUSTRIAL CONTROL

Significant Accomplishments and Documentation of the International Purdue Workshop on Industrial Computer Systems. Part IV. Some Reports on the State-of-the-Art and Functional Requirements for Future Applications.

DESCRIPTIVE NOTE: Final rept. 1 Feb 76-31 Jan 77

JAN 77 320P

CONTRACT: N00014-76-C-0732

UNCLASSIFIED REPORT

DESCRIPTORS: \*Digital computers, \*Computer applications, \*Industries, Workshops(Meetings), Programming languages, Real time, Consoles, Multiplexing, Production control, Computer programming, Failure, State of the art, International  
IDENTIFIERS: \*Meetings

This volume represents Part 4 of a six volume set reproducing the major work accomplished during the past eight years. This material is reprinted from the minutes of the several individual meetings of the Workshop and represents the work carried out by the standing committees of the Workshop.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A037 686

21/5

13/10  
OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)

The Marine Gas Turbine--The UK Provides a Case Study in Technological Development,

FEB 77 29P Nunn, Robert H. ;

REPT. NO. ONRL-R-1-77

UNCLASSIFIED REPORT

DESCRIPTORS: \*Gas turbines, \*Marine surface propulsion, State of the art, Case studies, Great Britain, Foreign technology

This report provides a review of the history of marine gas turbines (MGIs) as propulsors for the Royal Navy, and some of the technological extensions that now appear to be especially promising. Beginning with the Gatric engine in 1943, successive engines are described which, in 1967, provided the confidence necessary for the UK to opt for total MGI propulsion in future naval surface craft. The developments from 1967 onward are briefly summarized, and the current state-of-the-technology is described. Special attention is given to gas generators and their associated ducting systems for use aboard ship. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A037 402 1/2 13/12  
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
PARIS (FRANCE)

Aircraft Operational Experience and Its  
Impact on Safety and Survivability.

DESCRIPTIVE NOTE: Conference Proceedings.

JAN 77 330P  
REPT. NO. AGARD-CP-212

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Flight Mechanics  
Panel Symposium, 31 May-3 Jun 76,  
Sandefjord(Norway). NATO furnished.

DESCRIPTORS: \*Aviation safety, \*Crash resistance,  
Aviation accidents, Accident investigations,  
Vulnerability analysis, Survival(General),  
Reliability, Hazards, Fire protection, Fire  
resistance, Fire suppression, Flight crews, Flight  
training, Flight recorders, Fault tree analysis,  
State of the art, NATO

IDENTIFIERS: \*Aircraft design

(U)  
(U)

The AGARD Flight Mechanics Panel Symposium  
on Aircraft Operational Experience and its  
Impact on Safety and Survivability was held so  
that experts in the fields of aircraft accident  
investigation; aircraft design for reliability and  
survivability; and hazards and piloting factors in  
aircraft operation could share their understanding,  
knowledge and experience in order to improve  
aircraft safety and survivability. The papers  
presented offer an excellent overview of the  
international state-of-the-art in aircraft safety and  
survivability. The symposium was organized into  
five sessions: (1) Accident Statistics and  
Analysis; (2) Design Practices for  
Aircraft Safety; (3) Design for Aircraft  
Vulnerability and Survivability; (4)  
Operational Experience and Safety  
Considerations; (5) Aircrew  
Considerations.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A037 239 20/4 14/2  
PENNSYLVANIA STATE UNIV UNIVERSITY PARK APPLIED RESEARCH  
LAB

Design Concepts for a Free Surface Flow  
Test Tunnel.

DESCRIPTIVE NOTE: Technical memo.,

FEB 77 58P Talian, J. S. ;  
REPT. NO. TM-77-33  
CONTRACT: N00017-73-C-1418

UNCLASSIFIED REPORT

DESCRIPTORS: \*Water tunnels, Test facilities,  
Hydrodynamics, Surfaces, Fluid flow, Literature  
surveys, Experimental design, State of the art,  
Conversion

(U)

A proposal was made to build a free surface flow  
test facility at the Garfield Thomas Water  
Tunnel. This facility was to be built by the  
conversion of the rectangular test section of one of  
the existing tunnels. As the project was begun a  
literature search was conducted to determine the  
state-of-the-art of free surface test sections. A  
testing program was then initiated and some design  
ideas were considered. This is a report of all the  
relevant work that has been completed to date.  
(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A035 921 12/2  
TEXAS UNIV AT AUSTIN CENTER FOR CYBERNETIC STUDIES

Some Recent Practical Misconceptions about  
the State of the Art of Network Algorithms. (U)

DESCRIPTIVE NOTE: Research rept..  
AUG 76 11P Glover, Fred ;Klingman, Darwin

REPT. NO. CCS-270  
CONTRACT: N00014-75-C-0616, N00014-75-C-0569  
PROJ: NR-047-021

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with  
Colorado Univ., Boulder. Sponsored in part by  
Contract N00014-76-C-0383.

DESCRIPTORS: \*Network flows, Algorithms, State of  
the art (U)

The purpose of this technical note is to correct  
several errors and misconceptions in a recent article  
appearing in Operations Research Concerning the  
state of the art in network solution methods and  
their computer implementations. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A035 873 13/2 13/13 8/13  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISS

Pavement Performance Models. Volume I.  
Repeated Load Fracture of Pavement  
Systems. (U)

DESCRIPTIVE NOTE: Rept for May 74-Nov 75,  
AUG 76 195P Witczak, Matthew W. ;  
REPT. NO. WES-CR-S-76-15-Vol-1  
CONTRACT: DOT-FA73WA1-377  
PROJ: 4A762719AT40  
MONITOR: FAA RD-75-227-1

UNCLASSIFIED REPORT

DESCRIPTORS: \*Pavements, \*Pavement bases, Civil  
engineering, Fatigue(Mechanics),  
Cracking(Fracturing), Loads(Forces), State  
of the art, Models, Asphalt, Cements, Binders,  
Materials, Road building equipment, Concrete,  
Emulsions, Deformation, Fracture(Mechanics),  
Soils, Strain(Mechanics), Test methods  
IDENTIFIERS: Dynamic stiffness machine, Pells  
strain criterion, WU006, PEG2719A (U)  
(U)

This report volume presents a state of the art for  
fatigue cracking of pavement systems. The report  
deals with prior research relating to the fatigue of  
asphalt concrete, asphalt emulsions, cement-modified  
emulsions, lime-treated material, lime fly ash, lime  
cement fly ash mixes, cement-treated material, and  
portland cement concrete. A comprehensive summary  
touching upon laboratory test procedures, test  
methods, influence of mix factors upon fatigue,  
generation of typical fatigue curves, development of  
fatigue fracture subsystems, and verification studies  
is presented. The state of the art is summarized  
and qualitatively rated relative to eleven different  
features felt to be necessary for the development of  
a fatigue subsystem. In addition, this summary  
formed the basis for recommendations dealing with  
future research on fatigue. The basis of the  
fatigue subsystem is formulated upon the concept that  
any such methodology proposed for fracture distress  
must ultimately be founded upon a functional pavement  
failure. Accordingly, the major results for future  
research, regardless of material type, (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
 AD-A035 687 13/13 11/7  
 CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN  
 ILL

Design Criteria for Theater of Operations  
 Glued-Laminated Timber Highway Bridges.  
 Volume I.

DESCRIPTIVE NOTE: Final rept..  
 JAN 77 20P Knab, L. I.; Moody, R. C.  
 ; Sanders, W. W., Jr.; Elleby, H. A.;  
 REPT. NO. CERL-TR-M-198-Vol-1  
 PROJ: 4A763734DT34  
 TASK: 04

(U)

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A035  
 688.

DESCRIPTORS: \*Military bridges, \*Laminates,  
 \*Bridges, Wood, Specifications, Theater level  
 operations, Criteria, State of the art, Cost  
 Construction, Materials, Loads (Forces), Cost  
 effectiveness, Civil engineering  
 IDENTIFIERS: Design, \*Military fixed bridges,  
 PE63734A, AST34, WU002

(U)

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This report presents structural design criteria  
 recommendations for theater of operations (T/O)  
 temporary glued-laminated timber highway bridges.  
 The report consists of two volumes: Volume I  
 provides the design criteria, procedures, and  
 material specifications, and Volume II contains  
 the development of and justification for the criteria  
 in Volume I. State-of-the-art methodologies  
 were used to develop the criteria, which are based on  
 modifications to existing military and permanent  
 criteria. Use of the criteria by engineers in  
 bridge design offices should result in T/O  
 bridges that have adequate safety and perform  
 satisfactorily. Material weight of glued-laminated  
 timber stringers in T/O bridges designed using  
 the recommended criteria, typically will be about 15  
 percent less than when designed using permanent  
 bridge criteria. (Author)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
 AD-A035 437 11/4  
 DELAWARE UNIV NEWARK CENTER FOR COMPOSITE MATERIALS

The Effects of Relative Humidity and  
 Elevated Temperature on Composite  
 Structures.

DESCRIPTIVE NOTE: Final rept. 1 Dec 75-31 Nov 76,  
 DEC 76 513P Vinson, J. R.; Pipes, R.  
 B.; Walker, William J.; Ulrich, Donald R.;  
 CONTRACT: AF-AFSR-2966-76  
 PROJ: 9782  
 TASK: 05  
 MONITOR: AFOSR TR-77-0030

(U)

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at Workshop on The  
 Effects of Relative Humidity and Elevated  
 Temperature on Composite Structures, Delaware  
 Univ., Newark, 30-31 Mar 76.

DESCRIPTORS: \*Composite structures, \*Composite  
 materials, \*Humidity, \*High temperature,  
 Workshops (Meetings), State of the art,  
 Degradation, Structural properties, Structural  
 mechanics, Moisture, Polymers, Matrix  
 materials  
 IDENTIFIERS: WUAFOSR978205, PE61102F

(U)

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Understanding the influence of combined relative  
 humidity and elevated temperature on the performance  
 of advanced polymer matrix composite structures is a  
 matter of pacing importance to the Air Force in  
 the development of future innovative structures.  
 Degradation of structural strength and durability  
 must be predictable if advanced composites are to be  
 widely accepted as an alternate material in aerospace  
 structural design. These Transactions are the  
 result of a Workshop which discussed the state-of-  
 the-art in both Polymer Chemistry and Mechanics  
 research dealing with the effects of relative  
 humidity and elevated temperature on composite  
 structures. In addition, pacing research topics  
 were identified which must be addressed in the future  
 if the goal of aerospace structural applications with  
 advanced composites is to be achieved.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
 AD-A035 137 13/2 7/1 13/10  
 COAST GUARD WASHINGTON D C OFFICE OF RESEARCH AND  
 DEVELOPMENT

Ultimate Disposal of Oil and Hazardous  
 Materials. (U)

DESCRIPTIVE NOTE: Final feasibility study,  
 OCT 75 68P Leary, John F. ;  
 REPT. NO. USCG-D-36-76

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Oil spills, \*Hazardous materials  
 transportation, \*Water pollution, \*Waste disposal,  
 \*Accidents, Chemicals, Storage, Material  
 separation, Recovery, Sorption, Linings,  
 Incinerators, Ships, Storage tanks, State of the  
 Art (U)

IDENTIFIERS: Oil pollution removal, Water  
 pollution control, Liquid waste disposal,  
 Contingency planning, Materials recovery,  
 Sorbents, Solid waste disposal (U)

This report covers an investigation of the state of  
 the art of methods available to store and/or dispose  
 of recovered oil and other hazardous chemicals which  
 are the result of a discharge into United States  
 inland and coastal waters. It includes the work  
 accomplished by other organizations, both industry  
 and government. The report also describes the kinds  
 of materials which likely will be recovered and  
 discusses alternative techniques/systems for storage  
 and disposal. Additionally, it discusses the areas  
 of the Ultimate Disposal Problem which require  
 research and development. It places particular  
 emphasis on the need to establish the most cost  
 effective and environmentally suitable Ultimate  
 Disposal System to satisfy the Coast Guard's  
 needs. (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
 AD-A034 401 1/1  
 ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
 PARIS (FRANCE)

State-of-the-Art in Unsteady Aerodynamics, (U)

NOV 76 12P Rodden, William P. ;  
 REPT. NO. AGARD-R-650

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Structures and  
 Materials Panel Meeting (43rd), London  
 (England) Sep 76. NATO furnished.

DESCRIPTORS: \*Aerodynamic loading, \*Aeroelasticity,  
 Instability, State of the art, Aerodynamics,  
 Lifting bodies, Mathematical prediction, Review (U)

The accurate prediction of unsteady air loads is  
 essential to avoiding problems and assuring safety in  
 many interdisciplinary regions involving  
 aeroelasticity and the dynamics of active controls.  
 However, the methods to predict such airloads are  
 complex and intricate. It was considered essential  
 to specify standard configurations and parameters,  
 and to encourage pioneering NATO scientists to  
 report their results early. This would provide  
 bases for evaluation and improvement of later and  
 following developments by other countries. New  
 developments are rapidly emerging in unsteady  
 aerodynamics. The aeroelastician will continue  
 heavy reliance on prediction of airloads from  
 theoretical methods. A terse description of the  
 new state of the art is provided in this report. (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A034 241 10/1 10/2 8/7  
BATTELLE PACIFIC NORTHWEST LABS RICHLAND WASH

The Use of Geothermal Energy at Military Installations.

(U)

DESCRIPTIVE NOTE: Research rept. 1 Sep-15 Oct 76,  
OCT 76 68P McSpadden, W. R. ;

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Energy conversion, \*Geothermy,  
Military facilities, Naval shore facilities,  
California, Geophysics, Electric power plants,  
Drilling, Cost estimates, State of the art,  
Bibliographies

(U)

IDENTIFIERS: Hot springs, Coso geothermal area,  
Naval weapons center

(U)

This report is a result of a review of eight ARPA funded projects conducted to identify (1) geothermal resources for military installations and (2) key problems for their development. Of these, four projects dealt with identification and evaluation of resources; two dealt with problems associated with the chemistry of geothermal fluids, in particular corrosion and scaling; one project was concerned with the critical problem of drilling for geothermal resources; and one was a review of the current state-of-the-art of geothermal energy development. As a result of these studies, two target areas have been identified as prime candidates for development of geothermal energy at military installations. The Coso Hot Springs, on the Naval Weapons Center at China Lake, CA, and the Marine Corps base at Twenty-nine Palms, CA. In addition, two test sites are proposed in southern Texas for research and development of geopressured systems. As of the beginning of FY77, the Coso Geothermal Site is under active exploration and development with research funding from ERDA. The objectives of these eight ARPA funded research projects have been accomplished.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A033 924 1/5 11/6  
NAVAL AIR ENGINEERING CENTER LAKEHURST N J GROUND SUPPORT EQUIPMENT DEPT

Control of Corrosion in Ground Support Equipment.

(U)

DESCRIPTIVE NOTE: Interim rept.,  
SEP 76 52P Roberts, E. W. ;

REPT. NO. NAEC-GSED-106

PROJ: F41461

TASK: F41461400

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Corrosion, \*Ground support equipment,  
\*Naval aircraft, Corrosion inhibition, Marine atmospheres, State of the art, Surveys, Photographic analysis, Maintenance, Control, Naval shore facilities

(U)

IDENTIFIERS: WUA340000051B, WU23

(U)

A summary of efforts to provide guidelines for control of corrosion of ground support equipment. Problem definition and 'state-of-the-art' investigations include findings of surveys of East and West Coast NAS/MCAS/CV sites. A comprehensive Corrosion Key analyzes the extensive photographic record from the survey. Data has been compiled relating to corrosion control methods, materials and equipment for inclusion in a NAVAIR manual specifically oriented for GSE.

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(Author)

## UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A033 847 14/5  
SOUTHWEST RESEARCH INST SAN ANTONIO TEXEvaluation of Single- and Multicolor Map and  
Chart Reproduction Equipment.DESCRIPTIVE NOTE: Final rept. 26 Feb-1 Nov 76,  
A. J. Baker, E. J. Sissung, M.  
NOV 76 90PCONTRACT: DAAG53-76-C-0094  
MONITOR: ETL 0080

(U)

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Reproduction(Copying), \*Printing  
equipment, Topographic maps, Charts, Maps,  
Lithography, Images, Military requirements,  
Electrostatics, Colors, Test and evaluation,  
Screens(Displays), State of the art, Offset  
printing, Reprography, Diazo compounds, Chromium  
compounds, Dioxides, Performance(Engineering)  
IDENTIFIERS: Reproduction equipment, Chromium  
dioxide

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This report covers the results of the investigation  
to determine the ability of state-of-the-art printing  
technologies to meet the military requirements for a  
quick reaction/limited quantity map and chart  
reproduction capability. The processes covered are  
aimed at meeting the requirements for single and  
multicolor reproduction. These requirements  
include: input, output, speed and quality of the  
reproduction, as well as restrictions on size, weight  
and environmental operating conditions. Covered in  
this report are the printing technologies which are  
considered to be the best candidates. Each of the  
methods are briefly described and the acceptable,  
marginally acceptable, and unacceptable  
characteristics as they relate to the military  
requirements are discussed. Specific additional  
comments are made about several of the processes and  
a representative list of manufacturers for each  
process is included. (Author)

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## UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A033 625 9/2  
ROME AIR DEVELOPMENT CENTER GRIFFISS AFB N YPresentations at the RADC/ARPA Invitational  
DOD/Industry Conference on Software  
Verification and Validation August 3, 4, 5  
1976.AUG 76 421P  
PROJ: 5581  
TASK: 02

(U)

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with  
Advanced Research Projects Agency, Arlington,  
Va.

DESCRIPTORS: \*Computer program verification,  
\*Computer program documentation, Computer programs,  
Computer programming, Conferences, Validation,  
Programming languages, Department of Defense,  
FORTRAN, State of the art, Industries, Quality  
control, On line systems, Antimissile defense  
systems

(U)

IDENTIFIERS: \*Computer software, Jovial  
programming language, PE62702F, WURADC55810273

(U)

Original and previously published papers are  
presented that define the state-of-the-art in  
software verification and validation. The papers,  
in general, cover the spectrum from large scale  
software system verification through working  
validation tools to Symbolic Execution and the  
theoretical proof of correctness advances.  
(Author)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A033 248

12/2

DECISIONS AND DESIGNS INC MCLEAN VA

Calibration of Probabilities: The State of the Art.

(U)

DESCRIPTIVE NOTE: Technical rept.,

AUG 76 72P Lichtenstein, Sarah ; Fischhoff,

Baruch ; Phillips, L. D. ;

CONTRACT: N00014-76-C-0074, ARPA Order-3052

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with Oregon Research Inst., Eugene, Rept. no. ORI-DDI-3.

DESCRIPTORS: \*Decision theory, \*Confidence level, Calibration, Uncertainty, Probability, Assessment, Forecasting, Accuracy, Heuristic methods, Scientific research, Reviews, State of the art

(U)

An important criterion for evaluating probability assessors is their degree of calibration. A probability assessor is well calibrated if, over the long run, for all statements assigned a given probability the proportion that is true is equal to the probability assigned. For example, if you are well calibrated, then across all the many occasions that you assign a probability of .8, in the long run 80% of them should turn out to be true. If, instead, only 70% are true, you are not well calibrated, you are overconfident. If 95% of them are true, you are underconfident.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A032 862

6/6

FLORIDA UNIV GAINESVILLE DEPT OF PLANT PATHOLOGY

Biological Control of Aquatic Weeds with Plant Pathogens.

(U)

DESCRIPTIVE NOTE: Final rept.,

OCT 76 28P Freeman, T. F. ; Conway, K.

E. ; Charudattan, R. ; Zettler, F. W. ;

CONTRACT: DACW73-73-C-0049

MONITOR: WES CR-A-76-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supersedes report dated Feb 76, AD-8009 804L.

DESCRIPTORS: \*Weed control, \*Aquatic weeds, \*Biological control, Pathogenic microorganisms, Literature surveys, State of the art, Herbicides, Plant pathology, Temperature, Humidity, Florida IDENTIFIERS: Eichhornia crassipes, Acremonium zonatum, Cercospora, Rhizoctonia solani

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In the early 1970's, an effort was initiated to locate and isolate pathogenic organisms for use in the biological control of aquatic plants with special reference to waterhyacinth. This report describes the exhaustive search which has been conducted both in the United States and in several foreign countries. Information on laboratory and field research studies is presented as well as the current state of the art in this area of aquatic plant management research. (Author)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A032 436 13/10  
 NAVAL INTELLIGENCE SUPPORT CENTER WASHINGTON D C  
 TRANSLATION DIV

Present State of the Art and Trends in the  
 Development of Hydrofoils (Sovremennoye  
 Sostoyaniye i Tendentsii Razvitiya Sudov na  
 Podvodnykh Kryl'yakh).

SEP 76 23P Milovanov, E. V. ;  
 REPT. NO. NISC-Trans-3858

(U)

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of Sudostroyeniye (USSR) n9  
 P10-17 1972.

DESCRIPTORS: \*Hydrofoil craft. Lifting surfaces,  
 Lift, Hydrodynamics, Hydrofoils, Marine engines,  
 Cavitation, Cavitation corrosion, Stability,  
 Performance (Engineering). Foreign technology,  
 State of the art, Translations, USSR  
 IDENTIFIERS: Hydrodynamic lift

(U)  
(U)

Present State of the Art and Trends in the  
 Development of Hydrofoils--Translation.

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A030 932 13/8 9/2  
 TEXAS A AND M UNIV COLLEGE STATION DEPT OF INDUSTRIAL  
 ENGINEERING

State-of-the-Art in Improved Parts  
 Programming for Numerically Controlled  
 Machines.

(U)

DESCRIPTIVE NOTE: Final rept.,  
 OCT 76 113P Fox, M. J. , Jr., Goforth,  
 R. E. ; Allen, Donald L. ; Bowers, B. C. ,  
 JC:

CONTRACT: DAAG47-76-C-0024

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supersedes report dated Jun 76,  
 AD-A026 231.

DESCRIPTORS: \*Manufacturing, \*Control sequences,  
 \*Computer aided instruction, \*Computer programs,  
 \*Numerical analysis, \*Production control,  
 \*Production engineering, \*Machining, Machines,  
 Computer applications, State of the art, Material  
 forming, Programming languages, Standardization  
 IDENTIFIERS: \*Numerical control machines,  
 \*Numerical control

(U)  
(U)

This report discusses the state-of-the-art of  
 numerical controlled manufacturing technology, as  
 reflected by current literature and research.  
 Standardization of machine languages and computer  
 software are identified as areas of major importance.  
 The incompatibility of postprocessors was found to  
 be a significant problem. The research of  
 Bradfo M. Smith in the standardization of  
 postprocessors is identified as an important  
 contribution to the efficient use of numerical  
 controlled machine tools. Little research on  
 literature on numerical controlled tooling, or its  
 standardization, was located. Direct numerical  
 control and computer numerical control are defined,  
 and their impact on numerical control noted. An  
 example of successful work exchange is cited,  
 however, the lack of standardization of  
 postprocessors is identified as a deterrent to  
 effective work exchange. On line, interactive  
 computer based information retrieval systems were  
 used, and the results are reported. (Author)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMQ7

AD-A030 998 20/11 11/8  
OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)An Industrial Technology Called Tribology-  
-the UK Experience and Its Implications. (U)DESCRIPTIVE NOTE: Technical rept..  
AUG 76 40P Nunn, Robert H. ;Herman,  
Herbert ;  
REPT. NO. ONRL-R-7-76

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Lubrication, \*Wear, \*Sliding  
friction, \*Wear resistance, \*State of the art,  
Bearings, Friction, Surfaces, Surface  
properties, Lubricants, Sliding contacts,  
Lubricants, Surface chemistry, Interactions,  
Metals, Foreign technology, Great Britain  
IDENTIFIERS: \*Tribology (U)  
(U)

Tribology, defined as the science and technology of interacting surfaces in relative motion and of related subjects and practices, is the result of a series of UK activities, begun in 1966, to provide remedies to certain industrial ills. This report, intended for the general reader, is an overview of the birth, growth, and present state of tribology in the UK. The actions of the Committee on Tribology are discussed, as well as those of the Tribology Centres and other UK organizations concerned with lubrication and wear. Relevant but broader issues are also discussed. These include the interdisciplinary approach, effective communication between academia and industry, and the concept of industrial technologies. Comments are offered concerning the lessons to be learned from the UK experience. Appendices provide brief descriptions of the proposed educational module in tribology, the symposium titled 'Tribology 1976,' and the practice of lubrication analysis including ferrography. (Author) (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMQ7

AD-A030 385 11/6  
NORTHEASTERN UNIV BOSTON MASSState-of-the-Art and Prospects for Magnetic,  
Electronic and Mechanical Applications of  
Amorphous Metals: A Synopsis of the ONR  
Materials Workshop at Northeastern  
University, Boston, Massachusetts 20-21  
November 1975. (U)DESCRIPTIVE NOTE: Technical rept.,  
76 11p Polk, D. E. ;Giessen, B.  
C. ;Gardner, F. S. ;  
REPT. NO. TR-1  
CONTRACT: N00014-75-C-0713  
PROJ: NR-031-736

## UNCLASSIFIED REPORT

Availability: Pub. in Materials Science and  
Engineering, v23 p309-316 1976.DESCRIPTORS: \*Metals, \*Amorphous materials, State  
of the art, Physical properties, Magnetic  
properties, Mechanical properties, Resistors,  
Alloys, Preparation, Reprints (U)

A workshop on the State-of-the-Art and Prospects for Magnetic, Electronic and Mechanical Applications of Amorphous Metals was held to provide a forum for discussions of the potential applications of amorphous metals and their related physical properties. Half-day sessions were devoted to: (1) preparation and characterization, (2) mechanical applications and (3) magnetic and electronic applications. This report seeks to present a synopsis of the views which were expressed. (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD-A029 422 1/5 4/2  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISS

Climatic Effects on Airport Pavement  
Systems State of the Art.

(U)

DESCRIPTIVE NOTE: Final rept. Oct 74-May 75,  
JUN 76 285P Dempsey, Barry J. ;  
REPT. NO. WES-CR-S-76-12  
MONITOR: FAA-RD 75-196

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Pavements. \*Landing fields,  
\*Climate, Runways, Pavement bases, Civil  
engineering, Surface temperature, Moisture content,  
Predictions, Surfaces, Strength(Mechanics),  
Stiffness, Heat transfer, Soil mechanics,  
Cements, Asphalts, Mechanical properties,  
Physical properties, Frost heave, State of the  
art, Methodology  
IDENTIFIERS: Design

(U)

This state-of-the-art report reviews the climatic parameters important to airport pavement design, the methodology by which climatic parameters are used to predict pavement design parameters, and the methodology by which climatic parameters are incorporated into design procedures. Methods for predicting temperature and moisture conditions in the pavement system are discussed. Also the pavement distresses which result from temperature and moisture effects are reviewed. The report includes a comprehensive discussion of the methodology for assessing the influence of climatic parameters on the properties of the airport pavement materials. Probabilistic procedures for evaluating the influence of climate on pavement systems are described. In conclusion, a brief summary of methodologies which could be used to include climatic parameters in airport pavement design is presented.

(U)

(Author)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD-A029 235 13/8 20/5  
AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OHIO

Laser Welding - The Present State-of-the-Art.

(U)

DESCRIPTIVE NOTE: Interim rept. Jan-Jul 75,  
NOV 75 75P Breinan, E. M. ; Banas, C.  
M. ; Greenfield, M. A. ;  
REPT. NO. AFML-TR-75-149  
PROJ: AF-7351  
TASK: 735102

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Laser welding, \*Welds, Metals,  
Ruby lasers, High temperature, High power,  
Structural properties, State of the art, Aluminum  
alloys, Titanium alloys

(U)

The evolution of laser systems is briefly reviewed from the first successful operation of the ruby laser in 1960 to the present. Laser materials processing developments are then reviewed followed by general discussions of currently available high power laser equipment, laser welding performance, laser weld characteristics, and the properties of laser welds in metals and alloys. A discussion of current industrial laser welding applications is also included. The report constitutes an effort to comprehensively review the important developments in laser welding up to the summer of 1975.

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(Author)



## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A028 605 14/5 9/2 13/5  
CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN  
ILL

Investigation of Automated Evaluation of  
Field Weld Radiographs. (U)

DESCRIPTIVE NOTE: Final rept.,  
JUL 76 19P Kearney, F.; Fornango, J.;  
REPT. NO. CERL-TR-M-185  
PROJ: DA-4-A-762719-AT-41  
TASK: 4-A-762719-AT-4104

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Welds, \*Radiography, \*Automation,  
\*Image processing, Images, Electronic scanners,  
Defects (Materials), Detection, Computers,  
State of the art (U)  
(U)

IDENTIFIERS: Image analysis (U)

Since evaluation of field welds using radiographs requires that an inspector compare the radiograph with a standard, subjectivity is introduced. An automated image-analyzing system is proposed to remove this subjectivity. Radiographs containing sharp, well-defined defects on a uniform background can be analyzed the cathode-ray scanners and special-purpose computers in real time. However, the visual contrast in field weld radiographs is rather poor, and many extraneous features are usually present. A scan of 80 standard radiographs using an image analyzer detected only 296 weld defects while human operators identified 988. Techniques for enhancement and filtering of extraneous features are essential to the automated analysis of field weld radiographs. It is recommended that further work on development of an automatic radiographic analyzer be deferred until major advancements occur in the state of the art of image analysis. (Author) (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A028 226 11/4 1/3  
DAYTON UNIV OHIO RESEARCH INST

Current Status of Composites Vulnerability to  
Lightning. (U)

DESCRIPTIVE NOTE: Technical rept. Mar-Aug 74,  
SEP 75 67P Waiko, L. C.;  
CONTRACT: F33615-72-C-2193  
MONITOR: AFFDL TR-74-146

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with General  
Electric Co., Pittsfield, Mass. Environmental  
Electromagnetics Unit, Rept. no. SRD-74-090.

DESCRIPTORS: \*Composite materials, \*Reinforced  
plastics, Vulnerability analysis, Lightning, State  
of the art, Vulnerability, Protection, Reinforcing  
materials, Boron, Carbon fibers, Epoxy resins,  
Airframes (U)

IDENTIFIERS: \*Boron reinforced plastics, \*Carbon  
fiber reinforced plastics, Graphite reinforced  
composites (U)

The report summarizes the current state of the art of knowledge regarding both the direct and indirect effects of Lightning on Composites. It includes a description of research and development efforts which should be undertaken to provide additional composite vulnerability data and enable development of effective protective measures. (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A028 031 13/3 13/2  
CALIFORNIA UNIV BERKELEY

State-of-the-Art Review on Shotcrete. (U)

DESCRIPTIVE NOTE: Final rept.,  
JUN 76 122P Brekke, T. L. ; Einstein, H.  
H. ; Mason, R. E. ;  
CONTRACT: DACA39-74-M-0371  
MONITOR: WES CR-S-76-4

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with  
Massachusetts Inst. of Techn., Cambridge Contract  
DACA39-75-M-0082, and Mathews (A. A.), Inc.,  
Rockville, Md.

DESCRIPTORS: \*Tunnels, \*Shotcrete, State of the  
art, Supports, Linings, Rock mechanics,  
Applicators, Sealants, Construction materials  
IDENTIFIERS: \*Tunnel linings, \*Underground  
supporting, Gunite, New Austrian tunneling  
method (U)

This report contains the results of four studies  
pertaining to shotcrete technology. The first part  
of the report is an overview of American practices  
in shotcrete. The second part is a discussion of  
the development and practice of shotcrete technology  
in Europe, including a description of the New  
Austrian Tunneling Method (NATM). The  
third part describes the experiences of the U. S.  
Bureau of Reclamation in using shotcrete for  
tunnel linings and their design and construction  
concepts. The final part of the report is a  
discussion of instrumentation currently employed for  
obtaining the data used in design of shotcreted  
tunnels being constructed by the NATM. The  
NATM involves the use of the theoretical-  
observational approach to design. Each part of the  
report also gives recommendations as to needed  
research requirements and suggestions pertaining to  
possible extended uses of shotcrete in this  
country. (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A027 507 5/9  
HUMAN RESOURCES RESEARCH ORGANIZATION ALEXANDRIA VATeam Training and Evaluation Strategies:  
A State-of-Art Review. (U)

DESCRIPTIVE NOTE: Special rept.,  
JUN 76 79P Wagner, H. ; Hibbits, N. ;  
Rosenbalt, R. ; Schulz, R. ;  
REPT. NO. HUMRRO-SR-ED-76-11  
CONTRACT: MDA903-76-C-0210, DARPA Order-3187

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Teaching methods, Skills, State of  
the art, Feedback, Military training, Assessment,  
Literature surveys, Simulation, Individualized  
training, Classification  
IDENTIFIERS: Team training (U)

A critical review and evaluation of the literature  
was performed to describe existing instructional and  
evaluation techniques relevant to team training.  
Comprehensive documentation sources such as  
Educational Resources Information Center (ERIC),  
Defense Documentation Information Center (DDIC),  
and National Technical Information Service  
(NTIS) were searched. In addition, the social  
psychological areas and the industrial training field  
were surveyed for relevant publications. Current  
studies and team training practices underway within  
the Services were examined and described. A  
classification scheme was introduced in which the  
training situations discussed in this review were  
categorized as either emergent or established.  
Using this classification scheme, state-of-the-art  
gaps in team training and evaluation were identified  
for needed research and development. (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A027 248 15/4 9/2

NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

Tactical Electronic Reconnaissance Processing  
and Evaluation Segment, A New Look.

(U)

DESCRIPTIVE NOTE: Master's thesis.

JUN 76 98P Kollay, Daniel Patrick ;  
Kreutzer, Kenneth Lee ;

UNCLASSIFIED REPORT

DESCRIPTORS: \*Electronic reconnaissance, \*Data processing, \*Tactical reconnaissance, Minicomputers, Electronic aircraft, State of the art, Computer architecture, Computer programs, Computer program documentation, Acceptability, Theses

IDENTIFIERS: Terpes project, CP-642B computers, CP-808 computers, AN/UYK-20, AN/TSQ-90, EA-6B aircraft, Mean time between failures, Cost of ownership, Computer software

(U)

(U)

With the proposed procurement of EA-6B aircraft, the U. S. Marine Corps planned the development of TERPES (Tactical Electronic Reconnaissance Processing and Evaluation Segment) to perform post-mission tape analysis. The development phase was initiated on a first generation tactical computer, CP-642B. The thrust of this paper was to identify state-of-the-art replacements for the CP-642B, while identifying areas of concern within the development cycle. Alternative systems were discussed with the emphasis on system flexibility and expandability.

(U)

(Author)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A027 184 18/5 20/14

SCIENCE APPLICATIONS INC BERKELEY CALIF

Evaluation of Present Internal Electromagnetic  
Pulse Interaction Technology: Description  
of Needed Improvements.

(U)

DESCRIPTIVE NOTE: Final rept.,  
MAY 76 57P Tesche, F. M. ; Morgan, M.  
A. ; Fishbine, B. H. ;

CONTRACT: F29601-75-C-0112

PROJ: AF-1209

TASK: 120905

MONITOR: AFWL TR-75-288

UNCLASSIFIED REPORT

DESCRIPTORS: \*Internal electromagnetic pulses, \*Coupling (Interaction), Electromagnetic fields, Mathematical models, Transmission lines, State of the art, Statistical analysis, Multiconductor cables, Electric cables, Aircraft

IDENTIFIERS: Bulk current

(U)

(U)

This report presents a description of the state of the art in the area of internal electromagnetic pulse (EMP) interaction technology. Improvements in the modeling methodology are suggested and a number of specific problems are described which will permit more accurate solutions to problems in this area.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A026 944 9/5  
MARTIN MARIETTA AEROSPACE ORLANDO FLAPrinted Wiring Board Production Assembly  
Cost Guidelines Manual.

(U)

DESCRIPTIVE NOTE: Final production manual rept. 26 Mar  
75-25 Mar 76.MAR 76 234P Osborne, Sol C.; Hutchinson,  
Wendell R.; Tartaglia, Frederick E.;  
REPT. NO. OR-13826-2  
CONTRACT: DAAB07-75-C-0029  
PROJ: DA-2759673

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Printed circuit boards, Cost analysis,  
Cost models, Production engineering, Automation,  
State of the art, Manual operation, Costs (U)

Cost forms, cost/mannour data tables and equipment  
payoff breakeven cost models provided for the user of  
this manual a direct approach of selecting the lowest  
cost PWB component assembly method. The  
comparisons required for solving assembly problems  
are given on state-of-the-art manual and automatic  
assembly methods. Formulated assembly and cost  
guidelines are provided for processes and equipment  
described for variety of manual and automatic  
assembly methods. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A026 937 1/1 14/2 12/1  
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
PARIS (FRANCE)Flight/Ground Testing Facilities  
Correlation.

(U)

DESCRIPTIVE NOTE: Conference proceedings.

75 488P  
REPT. NO. AGARD-CP-187

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Papers presented at the Meeting of  
the Flight Mechanics Panel (46th) 9-13 Jun 75,  
Valloire (France). Text in English and French.  
NATO furnished.

DESCRIPTORS: \*Wind tunnel tests, \*Flight testing,  
\*Correlation techniques, \*Symposia, Test methods,  
Experimental design, Experimental data, Wind  
tunnel models, Computer applications, Mathematical  
prediction, Model theory, Data reduction, On line  
systems, Reynolds number, Wind tunnels, Walls,  
Transonic characteristics, Helicopters, Short  
takeoff aircraft, Jet fighters, Supersonic  
transport, Aerodynamic characteristics, State of  
the art, Conferences, NATO (U)

Correlation is ultimately the only way of measuring  
the validity of any analytical tool or ground test  
technique. As programs become more and more  
expensive, and the risks more and more dependent on  
ability to predict flight characteristics with  
confidence, it becomes increasingly important to  
establish the state of our correlation base. The  
purpose of this Symposium was to provide an  
opportunity to focus on correlation as a technology  
in its own right, the techniques available, and the  
state-of-the-art as revealed by results. The  
Symposium was organized around three subject  
areas: Correlation of basic wind-tunnel  
techniques; Flight-test techniques for correlation;  
and Wind-tunnel/Flight correlation. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A024 526 5/9 5/2  
NAVAL TRAINING EQUIPMENT CENTER ORLANDO FLA

Instructional Systems Development:  
Conceptual Analysis and Comprehensive  
Bibliography.

DESCRIPTIVE NOTE: Interim rept. Sep 75-Jan 76,  
FEB 76 291P Montemerlo, Melvin D. ;  
Tennyson, Michael E. ;  
REPT. NO. NAVTRAEQUIPC-IH-257

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Includes Errata Notice No. 1  
dated 11 May 76.

DESCRIPTORS: \*Teaching methods, \*Bibliographies,  
Training devices, Education, Human factors  
engineering, Job analysis, Computer aided  
instruction, Cost effectiveness, Personnel  
management, Systems analysis, Operations research,  
Manuals, Instruction manuals, State of the  
art

(U)

This report constitutes a first step in improving  
the state-of-the-art of instructional systems  
development (ISD). It contains a bibliography of  
about 4,000 entries divided into the following  
sections: instructional systems development/  
systems approach to training, evaluation, methodology/  
selection, media selection, programmed instruction/  
computer assisted instruction, task analysis, job  
analysis, task taxonomy, specific behavioral  
objectives, sequencing, instructor training,  
educational management, cost effectiveness,  
innovation, educational technology, human  
engineering, simulation, and systems analysis/  
operations research. This report also presents a  
conceptual analysis of ISD, a process which is also  
known as: the systems approach to training  
(SAT), systems engineering of training (SET),  
training situation analysis (TSA), and the design  
of instructional systems (DIS). The related  
literature, dating from 1951 to the present,  
indicates the state-of-the-art to be unsettled.  
Over 100 ISD manuals are available which contain  
fundamental disagreement on the most basic aspects of  
course design. None of the manuals have been  
empirically validated. In an effort to understand  
the present state of affairs with respect to ISD,

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A024 401 9/2 17/8  
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
PARIS (FRANCE)

OCR and Its Application to Documentation -  
A State of the Art Review.

MAR 76 38P Bush, Donald A. ; Weaver, J.  
A. ;  
REPT. NO. AGARD-ograph-216

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Nato furnished.

DESCRIPTORS: \*Optical character recognition, \*Input  
output devices, Machine translation, Abstracts,  
State of the art, Reviews, Nato, Documents,  
Data bases  
IDENTIFIERS: Technical information, Type setting,  
Computer type setting, Machine abstraction,  
Research needs

(U)

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The purpose of this Agardograph is to consider  
current methods of preparation, abstraction and  
dissemination of technical information and to make  
suggestions and recommendations as to how these  
processes could be speeded up and otherwise improved.  
The technology of data handling and data processing  
has improved dramatically over the last decade, and  
the pace of advance seems to be still increasing.  
Techniques of OCR (Optical Character  
Recognition), large scale data-base access and  
manipulation, (perhaps via world wide computer  
networks) and computer controlled typesetting are  
relevant to the area of interest of this paper.  
They have all been fully proven by extensive real  
use in the hard commercial world. Two others areas  
of interest - automatic machine translation and  
abstraction - whilst not yet proven to the same  
degree, are being actively worked upon and may  
shortly become a useful reality. Extensive use of  
the technological tools already available, together  
with a conscious monitoring of technical advances can  
lead to hardware systems which can enhance our  
present capability in the area of documentation. To  
make best use of such systems, however, requires the  
establishment of, and compliance with, standard rules  
of procedure. It is hoped that this note may give  
those having the authority to define such procedural  
guidelines some information to consider.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A023 987 17/4 9/3  
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

Postulated an Airborne ECM Threat.

DESCRIPTIVE NOTE: Technical rept.,

MAR 76 19p Anderson, Donald D. ;

REPT. NO. ECOM-5722

PROJ: DA-1-S-763718-D-267

TASK: 1-S-763718-D-26708

UNCLASSIFIED REPORT

DESCRIPTORS: \*Electronic countermeasures, Airborne, Threats, Threat evaluation, Jamming, State of the art, United States, Predictions

This report will permit the reader to postulate his own ECM threat based on US technology. He will be able to calculate the power of airborne jammers at any frequency from 0.2 to 12 GHz and make a state-of-the-art estimate or estimate future threats (1980). He will also know tube power, antenna gain, system losses, prime power requirements, and total system weight. The information in this report is based entirely on unclassified US information.  
(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A023 622 14/2 11/1 11/4  
ROCKWELL INTERNATIONAL THOUSAND OAKS CALIF SCIENCE CENTER

Proceedings of the ARPA/AFML Review of Quantitative NDE.

DESCRIPTIVE NOTE: Annual rept. no. 1, 3 Jun 74-17 Jul 75.

DEC 75 848P Thompson, Donald O. ;

REPT. NO. SC595-10AR

CONTRACT: F33615-74-C-5180

PROJ: AF-7351

TASK: 735109

MONITOR: AFML, GIDEP TR-75-212, E059-1944

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Also available as Rept. no. GIDEP-556.45.00.00-07-01.

DESCRIPTORS: \*Nondestructive testing, \*State of the art, \*Adhesive bonding, \*Composite materials, \*Adhesives, \*Ultrasonic radiation, Signal processing, Residual stress, Acoustics, Emission, Failure (Mechanics), Electrons, Positrons, Photons, Annihilation radiation, Quality assurance, Standards, Ultrasonics, Scattering, Transducers

(U)

The edited transcripts of the ARPA/AFML Review of Quantitative NDE held on July 15-17, 1975, at the Science Center, Rockwell International, are presented in this document. Several key topics form the core of these presentations and discussions. They include quantitative ultrasonics, adhesives and composites, emissions related to the prediction of failure, and residual stress. In addition a panel discussion is presented related to the role of ultrasonic standards in the emerging quantitative ultrasonics area. It is believed that this document provides a reasonable summary of NDE research and development currently underway in the areas selected for presentation.  
(Author)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A023 580 14/2 20/6  
FLORIDA UNIV GAINESVILLE DEPT OF CHEMISTRYAtomic Fluorescence Spectrometry--Past,  
Present and Future.75 7P Winefordner, James D. ;  
CONTRACT: AF-AFOSR-2574-74

PROJ: AF-9536

TASK: 953601

MONITOR: AFOSR TR-76-0281

## UNCLASSIFIED REPORT

Availability: Pub. in Chemtech, p123-127 Feb  
75.DESCRIPTORS: \*Atomic spectroscopy, \*Fluorescence,  
\*State of the art, Atomic spectra, Spectrometry,  
Flames, Reviews, Reprints

IDENTIFIERS: \*Atomic fluorescence spectrometry

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(U)

Atomic fluorescence spectrometry (AFS) is reviewed with respect to the past, the present, and the future. The past consists of a historical survey of physical studies. The present consists of a survey of the types of fluorescence, the sensitivity of measurement, the experimental setup, and a listing of some analytical figures of merit and applications of AFS. The future of AFS is speculated upon with respect to analytical and physical uses and instrumental improvements.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A021 484 8/1

ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISSFeasibility of Transplantation, Revegetation,  
and Restoration of Eelgrass in San Diego  
Bay, California.

(U)

## DESCRIPTIVE NOTE: Final rept.,

FEB 76 50P Boone, Charles G. ; Hoepfel,

Ronald E. ;

REPT. NO. WES-MP-Y-76-2

CONTRACT: DACW09-75-B-0026

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Aquatic plants, \*Grasses, \*San  
Diego Bay, Vegetation, Reviews, State of the  
art, Transplantation, Costs, Feasibility studies,  
California

IDENTIFIERS: \*Zostera marina, Sea grasses

(U)

(U)

The study was conducted to evaluate the feasibility of several methods of eelgrass (Zostera marine L.) transplantation, restoration, and revegetation in San Diego Bay, California. A literature survey was conducted and current state-of-the-art eelgrass transplant methodologies are presented. Two transplant methods are recommended; however, since neither of these has been tested in a large-scale field program, a preliminary pilot transplant study is also recommended. Transplantation costs for each method have been estimated and are also presented.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A020 698 13/2 19/1  
PICATINNY ARSENAL DOVER N JAmmonia Removal from Wastewaters: A  
Review of the State of the Art.

DESCRIPTIVE NOTE: Final rept. Jul-Dec 74,  
JAN 76 64P Whiting, John H. ; Adams, A.  
Paul ; Roth, Milton ;  
REPT. NO. PA-TR-4904  
PROJ: USATECOM-5-CO-523-ECF-011

UNCLASSIFIED REPORT

DESCRIPTORS: \*Waste treatment.  
\*Wastes(Industrial), \*Waste water, \*Munitions  
industry, \*Military facilities. State of the art,  
Ammonia, Removal, Toxicity, Cost effectiveness,  
Oxidation, Algae, Nitrates, Ion exchange,  
Regulations, Land use, Reverse osmosis,  
Effectiveness, Chlorination  
IDENTIFIERS: \*Industrial waste treatment,  
Nitrification, \*Denitrification

Processes applicable to the removal of ammonia present in munitions plant waste streams were reviewed and evaluated. The high levels of ammonia, nitrates, and the presence of various explosive wastes contained in the wastewaters present unique problems to ammonia abatement processes. Abatement regulations require removal of both the ammonia and nitrates from these munition plant waste streams. Several processes are effective in the removal of ammonia from wastewaters, but they do not reduce the nitrate concentration. Other processes must be employed to accomplish the nitrate removal, thus imposing additional costs. Ammonia removal processes such as air stripping, ion exchange, and breakpoint chlorination are examples of methods that are only effective in removing ammonia. Biological nitrification-denitrification is an effective two-step abatement process for reducing both ammonia and nitrate concentrations in the wastewater. It is a clean, efficient, and cost-effective process in which ammonia is biologically oxidized to nitrite, then to nitrate which, in turn, is reduced to nitrogen gas by the biological denitrification process.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A019 859 20/6 17/2 1/3  
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF  
ENGINEERINGA Theoretical Study of Fiberoptronics for  
Avionic Applications.

DESCRIPTIVE NOTE: Master's thesis,  
DEC 75 118P Gaffney, William Michael ;  
REPT. NO. GEO/PH/75-10

UNCLASSIFIED REPORT

DESCRIPTORS: \*Fiber optics, \*Optical communications,  
\*Avionics, Laser communications, Optical  
waveguides, Semiconductor devices, Light emitting  
diodes, Lamps, Light transmission, Optical  
detectors, Aircraft equipment, State of the art,  
Multiplexing, Theses  
IDENTIFIERS: Optical data processing, Design

This project provides a survey of the current state-of-the-art and considers fiberoptronics in the light of potential avionic applications. Types of fibers, light generators, and light detectors which are suitable for avionic applications are discussed. Fiberoptronic links are viable for use in highly selective areas such as multiplexed data bus and cryptographic systems but components need to be qualified to the environmental conditions of the aircraft. Calculations for a basic fiberoptronic link are discussed. The report contains a 42-item bibliography.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A018 738 1/3 13/10  
INFORMATICS INC ROCKVILLE MDSoviet and East European Developments in  
Surface Effect Vehicles.NOV 75 83P Boylan, L. H. ;  
CONTRACT: MDA903-76-C-0099, DARPA Order-3097

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Surface effect vehicles, \*Surface effect ships, \*Ground effect machines, \*Air cushion vehicles, Foreign, State of the art, Land transportation, Water traffic, Landing, Takeoff, Trailers, Tractors, Lift fans, Skirts, Ground effect, Drilling machines, Air transportation, Aerodynamic configurations, Aerodynamic characteristics, Performance(Engineering), USSR, Bulgaria, Poland, Rumania, Military forces(Foreign), Government(Foreign).

IDENTIFIERS: Patents  
REVIEWERS: rigid sidewall vessel, Wing in ground effect, Aerostatic vehicles, Aerodynamic vehicles, Design, Hoverscooters

(U)

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The purpose of this report is to provide an overview of the history and state of the art of Soviet and East European developments in surface effect vehicles. Part I reviews 22 vehicles which were designed or built between 1927 and the mid 1960's. Part II of the report focuses on the operational surface-effect vehicles of the Soviet Union, Bulgaria, Poland and Rumania. Air lubricated vessels are not covered in this report. (Author)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A018 681 13/2 1/5 20/11 12/1  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG MISS

State-of-the-Art for Prediction of Pavement Response.

(U)

DESCRIPTIVE NOTE: Final rept. 26 Aug 74-12 Sep 75,  
SEP 75 81P Crawford, John E. ;Katona,

Michael G. ;

CONTRACT: DOT-FA73WAI-377

MONITOR: FAA-RD, WES 75-183, CR-S-75-8

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with Civil Engineering Lab. (Navy) Port Hueneme, CA.

DESCRIPTORS: \*Pavements, \*Finite element analysis, \*Mathematical models, \*Runways, State of the art, Mathematical prediction, Structural engineering, Layers, Elastic properties, Three dimensional, Models, Computerized simulation  
IDENTIFIERS: DOT/4CZ/CA

(U)

(U)

This report focuses on the finite element idealization as related to principles of pavement analysis, while other techniques and topics are introduced to provide a complete picture. The topics presented are organized to illustrate the similarities and consequences of using various prediction techniques. These topics include: the theoretical basis of the principal techniques, material models, comparison of analytical and measured results, and the selection of a prediction technique. (Author)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A018 368 15/4 15/7  
BOLT BERANEK AND NEWMAN INC ARLINGTON VA

Tactical Order of Battle: A State-of-the-Art Survey.

(U)

DESCRIPTIVE NOTE: Final rept. Nov 72-Jan 74,  
OCT 75 122P Bowen, Russell J.; Halpin,  
Jeanne A.; Russell, Peter T.; Staniforth, Bruce  
J. ;  
REPT. NO. BSN-2662  
CONTRACT: DAHC19-73-C-0019  
PROJ: DA-2-O-062101-A-754  
MONITOR: ARI Technical Paper-265

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Order of battle. \*Tactical warfare,  
\*Combat effectiveness. \*Military intelligence,  
Enemy personnel. Military forces (Foreign).  
Deployment, Army operations. Division level  
organizations. Battalion level organizations. Data  
acquisition. Data processing. Military doctrine.  
Targeting. Timeliness. Decision making. Military  
requirements. Computer programs. Display systems.  
Electronic intelligence. Information retrieval,  
Vietnam. Command and control systems. Army  
training. Manpower utilization. Questionnaires.  
Methodology. Skills. State of the art. Surveys,  
Confidence level. Confidence limits.  
Uncertainty

IDENTIFIERS: Lessons learned

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This report provides a state-of-the-art survey of tactical order of battle (OB) intelligence, concentrating on the division OB section and based on official documentation, authoritative reference material, and the results of an informal questionnaire and interview program with experienced combat intelligence and operations personnel. The survey includes: Historical development of OB; role, function, and operations of the division OB section; examination of the OB factors; and the results of a brief survey of military opinions on OB. OB analysis requires more varieties of detailed information processing than any other single area of combat intelligence. However, the procedures and techniques available are not standardized or well developed.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A017 373 13/8 14/2  
BOEING COMMERCIAL AIRPLANE CO SEATTLE WASHPractical Sensitivity Limits of Production  
Nondestructive Testing Methods in Aluminum  
and Steel.

(U)

DESCRIPTIVE NOTE: Final rept. 15 Mar 73-15 Sep 74,  
JAN 75 187P Southworth, Howard L. ;  
Steele, Norman W. ; Torelli, Peter P. ;  
REPT. NO. D6-41978  
CONTRACT: F33615-72-C-2202  
PROJ: AF-7351  
MONITOR: AFML TR-74-241

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Nondestructive testing,  
Defects (Materials), Steel, Aluminum alloys,  
State of the art, Magnetic materials. Particles,  
Penetration, Test methods, Ultrasonic tests,  
Radiography, Eddy currents, Sensitivity  
IDENTIFIERS: Steel 4340, Aluminum alloy 2024

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The report describes the work accomplished under an 18-month program conducted to evaluate the sensitivity capabilities of current state-of-the-art nondestructive inspection methods. The methods include magnetic particle, penetrant, eddy-current, ultrasonic, and radiographic. These capabilities were demonstrated in response to varied surface flaws and were statistically defined in terms of probability and confidence of detection. This was accomplished with differing specimen configurations in two representative aircraft structural alloys and for both laboratory and production inspections.

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD-A014 640 1/3 20/1  
UNITED TECHNOLOGIES CORP WINDSOR LOCKS CONN HAMILTON  
STANDARD DIV

A Comprehensive Review of Helicopter Noise Literature.

DESCRIPTIVE NOTE: Final rept.,  
JUN 75 188P Magliozi, B.; Metzger, F.  
B.; Bausch, W.; King, R. J.;  
CONTRACT: DOT-FA74WA-3477  
MONITOR: FAA-RD 75-79

UNCLASSIFIED REPORT

DESCRIPTORS: \*Helicopters, \*Aircraft noise, State of the art, Bibliographies, Impulse noise, Gear noise, Propeller noise, Gas turbines, Engine noise, Tolerances (Physiology), Noise reduction  
IDENTIFIERS: Noise certification criteria

This report summarizes the state-of-the-art in helicopter noise. It includes a bibliography of reports on all components of helicopter noise including main rotor, tail rotor, engine and gearbox. Literature on helicopter noise reduction and subjective evaluation of helicopter noise were also included. Capsule summaries of important reports are included which describe the purpose of the report, summarizes the important results, compares the report with others on the same subject, and provides a critical evaluation of the work presented. It is concluded that the available prediction methodology provides a means for estimating helicopter sources on a gross basis. However, the mechanisms of noise generation are still not fully understood, although the experimental and theoretical tools are now available to conduct the definitive experiments and establish the mathematical models needed for accurate definition of helicopter noise generation mechanisms. Spectrum analyses of helicopter noise show that main rotor, tail rotor, and engine sources contribute significantly to annoyance. In cases where these sources have been heavily suppressed, gearbox noise will also appear as a significant contributor to annoyance. Therefore, quieter helicopters must include suppression of all of these components.

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD-A014 233 9/2 17/2  
ILLINOIS UNIV AT URBANA-CHAMPAIGN CENTER FOR ADVANCED  
COMPUTATION

A State-of-the-Art Report on Network Data Management and Related Technology.

APR 75 159P Belford, Geneva G.; Bunch, Steve R.; Day, John D.; Alsbert, Peter A.; Brown, Deborah S.;  
REPT. NO. UIUC-CAC-DN-75-150  
CONTRACT: DCA100-75-C-0021

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A014 232.

DESCRIPTORS: \*Communications networks, \*Data management, State of the art, Data compression, Clustering, Time sharing, Allocations, Data processing security, Programming languages  
IDENTIFIERS: \*Computer networks, Resource allocation, Computer privacy, Data structures, protocols

The state-of-the-art is described in 16 areas related to data management and resource sharing on computer networks. The data management topics covered include data organization (structures and access techniques), optimization (hashing, clustering, partitioning, and compression), data languages (for structure definition and query), and file allocation on a network. The topics covered relating to the network and systems environment include communications, resource allocation, measurement and evaluation, network front ends, and security. The topics relating to network applications discuss general user support, and network management.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A013 961 20/3  
CALIFORNIA UNIV SAN DIEGO LA JOLLA DEPT OF PHYSICS

Superconductivity in 1973. (U)

74 3P Matthias, Bernd T. ;  
CONTRACT: F44620-72-C-0017  
PROJ: AF-9764  
MONITOR: AFOSR TR-75-1210

## UNCLASSIFIED REPORT

Availability: Pub. in International Jnl. of  
Quantum Chemistry. Symposium (8th). p499-500  
1974.DESCRIPTORS: \*Superconductors. \*State of the art,  
Organic materials, Crystals, Solid state physics,  
Niobium alloys, Germanium alloys, Lithium  
compounds, Titanium oxides, Reprints (U)Superconductivity in 1973 experienced steeper ups  
and downs than at any other time during the past five  
years. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A013 668 17/10 8/11  
RAND CORP SANTA MONICA CALIFSoviet Strong-Motion and Vibration-and-  
Blast Seismographs. (U)DESCRIPTIVE NOTE: Interim rept.,  
JUL 75 98P Shishkevish, Charles ;  
REPT. NO. R-1652-ARPA  
CONTRACT: DAHC15-73-C-0181, ARPA Order-189-1

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Seismographs, \*Seismometers, USSR,  
Ground motion, Seismic detection, Blast,  
Vibration, Foreign technology, Literature surveys,  
State of the art, Galvanometers, Accelerometers,  
Seismic arrays, Networks, Instrumentation,  
Recording systems, Specifications (U)  
IDENTIFIERS: Strong Motion Seismometers,  
Design (U)

This report contains a description of the current state of the art of Soviet strong-motion and vibration-and-blast seismographs, taken from Soviet publications available in the United States through early 1975. It is intended primarily for U.S. seismologists working with strong-motion data, and persons interested in Soviet advances in seismic instruments. The report contains:

(1) four tables listing the technical specifications of Soviet seismometers and accelerometers used most widely in galvanometrically recording strong-motion seismographs; (2) a description of recorders; characteristics of four of the most widely used strong-motion instruments; and specifications of direct-recording, three-component seismograph systems. Also treated are auxiliary equipment, including seismic triggers, and seismic engineering networks. An extensive bibliography is included. (U)



## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A012 837 6/6 6/3 8/8  
MICHIGAN UNIV ANN ARBOR SCHOOL OF NATURAL RESOURCES

State-of-the-Art Survey and Evaluation of  
Marsh Plant Establishment Techniques:  
Induced and Natural. Volume II. A Selected  
Annotated Bibliography on Aquatic and Marsh  
Plants and Their Management.

DESCRIPTIVE NOTE: Final rept.,

DEC 74 209P Wentz, W. Alan ; Smith,

Rachel L. ; Kadlec, John A. ;

CONTRACT: DACW72-74-C-0010

MONITOR: AEWES CR-D-74-9-Vol-2

(U)

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Dredged Material  
Research Program. See also Volume 1 dated Dec 74,  
AD-A012 834.

DESCRIPTORS: \*Aquatic plants. \*Swamps. \*Ecology.  
\*Plant growth. \*Bibliographies. State of the art.  
Salt water. Fresh water. Drainage. Aeration.  
Water table. Rainfall. Soils. Evaporation.  
Temperature. Light. Ocean tides. River currents.  
Water waves. Great Lakes. Coastal regions.  
Estuaries. Pollution. Grasses

IDENTIFIERS: \*Salt marshes. \*Spartina  
alterniflora. Vascular plants. \*Dredging. Dredge  
spoil. Ecosystems

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The purpose of the bibliography is to make  
available an annotated listing of references which  
were not cited in Volume I. Although the  
bibliography does not represent an exhaustive review  
of the literature, it does provide an extensive  
survey of the pertinent references on the ecology and  
management of aquatic and marsh plants. The  
references selected for the bibliography emphasize  
studies useful to researchers and managers. In  
accordance with the focus of Volume I, this  
volume concentrates on coastal, Great Lakes, and  
riverine marshes.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMD7

AD-A012 834 6/6 6/3 8/8  
MICHIGAN UNIV ANN ARBOR SCHOOL OF NATURAL RESOURCES

State-of-the-Art Survey and Evaluation of  
Marsh Plant Establishment Techniques:  
Induced and Natural. Volume I. Report of  
Research.

DESCRIPTIVE NOTE: Final rept.,

DEC 74 271P Kadlec, John A. ; Wentz, W.

Alan ;

CONTRACT: DACW72-74-C-0010

MONITOR: AEWES CR-D-74-9-Vol-1

(U)

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Dredged Material  
Research Program. See also Volume 2 dated Dec 74,  
AD-A012 937.

DESCRIPTORS: \*Aquatic plants. \*Swamps. \*Ecology.  
\*Plant growth. State of the art. Salt water.  
Fresh water. Drainage. Aeration. Water table.  
Rainfall. Soils. Evaporation. Temperature.  
Ocean tides. River currents. Water waves. Fresh  
water. Turbidity. Reproduction (Physiology).  
Seeds. Atlantic Ocean. Coastal regions.  
Grasses. Pollution

IDENTIFIERS: \*Salt marshes. \*Spartina  
alterniflora. Atlantic Coast (United States).  
Dredging. Dredge spoil. Ecosystems

(U)

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Knowledge of marsh and aquatic plant establishment  
was assessed by reviewing the literature and  
contacting agencies and individuals likely to have  
relevant information. Factors that affect plant  
establishment in saltwater areas include tides,  
salinity, drainage, aeration, water table, rainfall,  
soil, evaporation, temperature, biota, water depth,  
light penetration, and current and wave action. In  
freshwater areas water levels or depths, substrate,  
water quality, turbidity, and currents and wave  
action are particularly important to plant  
establishment. Aquatic and marsh plants propagate  
naturally by both seeds and vegetative parts. The  
propagules are dispersed by wind, water animals, and  
man. By controlling various environmental factors,  
it is possible to promote and encourage the natural  
invasion and growth of aquatic and marsh plants,  
especially in freshwater systems.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD-A012 728 13/13 13/2 8/11  
ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN  
ILL

Guidelines for Developing Design Earthquake  
Response Spectra. (U)

DESCRIPTIVE NOTE: Final rept..

JUN 75 362p Hays, Walter W. ; Algermissen,  
S. T. ; Espinosa, Alvaro F. ; Perkins, David  
M. ; Rinehart, Wilbur A. ;  
REPT. NO. CERL-IR-M-114  
PROJ: CERL-72-32

## UNCLASSIFIED REPORT

Availability: Microfiche copies only.

DESCRIPTORS: \*Earthquake resistant structures,  
\*Civil engineering. \*Seismology, Construction,  
Site selection, Ground motion,  
Foundations(Structures). Earthquakes, Seismic  
waves, Propagation, Intensity, Power spectra,  
Loads(Forces), Shaking, Attenuation, Soils,  
Faults(Geology). Geological survey, Hospitals,  
Communications central, Electric power plants,  
Fire fighting, Military facilities, Architecture,  
State of the art, United States, Hazards  
IDENTIFIERS: Guidelines, Architectural  
engineering, Fire stations (U)

State-of-the-art information required for  
developing design earthquake response spectra is  
compiled and synthesized in a manual-like format to  
provide the user with general guidelines for  
estimating the ground motion load expected for sites  
of interest located throughout the United States.  
The information contained in this document  
constitutes a subset of the comprehensive body of  
knowledge available in the field. This subset is  
considered pertinent for a technical understanding of  
the theoretical and empirical bases currently used to  
develop design earthquake response spectra for use in  
construction, design, and evaluation of important  
facilities. These guidelines relate to the  
following analyses: (1) determination of  
seismicity parameters, (2) estimation of seismic  
attenuation functions, (3) estimation of maximum  
intensity of shaking, (4) estimation of ground  
motion response spectra, and (5) estimation of  
local soil amplification effects. (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD-A012 651 13/2 8/8  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISS

Heat Dispersion in Physical Estuarine  
Models. Report 1. State of the Art, (U)

JUN 75 26P Zitta, Victor L. ; Douglas,  
George W. ;  
REPT. NO. AEWES-RR-H-75-2-1

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Estuaries, \*Heat transfer,  
\*Hydraulic models, \*Thermal pollution, State of  
the art, Dispensing, Turbulent diffusion, Plumes,  
Mass transfer, Convection(Heat transfer),  
Entrainment, Buoyancy, Air water interactions,  
River currents, Prototypes, Far field,  
Distortion, Turbulent flow, Reynolds number  
IDENTIFIERS: Receiving waters, Froude number (U)  
(U)

Prototype heat exchange mechanisms and scaling laws  
for the reproduction of thermal phenomena in  
hydraulic models are presented for each stage of the  
dispersion process. These stages are:  
Turbulent or momentum entrainment at the efflux  
jet; buoyant rise or fall of the heated plume;  
convective spread of the plume over the surface of  
the receiving waters; mass transport of the plume by  
ambient currents; diffusion and dispersion due to  
turbulence in the receiving waters; and surface heat  
exchange with the atmosphere. (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A011 802 9/1  
RCA LABS PRINCETON N JTransferred-Electron-Device (TED) Technology  
Impact Study.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 74-31 Mar 75.

JUN 75 53P Nowogrodzki, Markus ; Narayan,

S. Yegna ;

REPT. NO. PPRL-75-CR-24-Vol-1

CONTRACT: N00014-75-C-0077

PROJ: NR-383-022, RF54-545

TASK: RF54-545-003

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Semiconductor devices, \*Signal  
processing, Gallium arsenides, Microwave equipment,  
Solid state electronics, State of the art,  
Reviews

(U)

IDENTIFIERS: \*Transferred electron devices

(U)

The objective of the overall program reviewed in the report was the assessment of the impact of a new technology - that of signal processing by means of transferred-electron devices (TEDs) - on a particular class of systems of interest to the U.S. Navy. This volume contains the findings of the first task; it describes the state-of-the-art of transferred electron devices used for signal processing purposes, and it provides projections of short-range progress in the device and system technologies.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A010 065 14/2 14/3

HUMAN ENGINEERING LAB ABERDEEN PROVING GROUND MD

An Advanced Eye-Movement Measuring and  
Recording System.

(U)

REPT. NO. 75 8P Monty, Richard A. ;

HEL-TM-13-75

## UNCLASSIFIED REPORT

Availability: Pub. in American Psychologist, v30

n3 p331-335 Mar 75.

DESCRIPTORS: \*Oculometers, \*Eye movements,  
\*Recording systems, \*Measurement, State of the  
art, High rate, Reprints

(U)

Young and Sheena (1975) have provided a comprehensive summary of available eye-movement recording devices. This companion article describes one of the more advanced eye-movement measuring systems currently in existence, the EG and G/HEL oculometer developed by Robert H. Lambert. The system reflects up-to-date use of the current state of the art of the corneal-reflection-pupil-center technique to monitor the eye while imposing only minimal constraints on the subject, and it incorporates automatic high-speed processing technology. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A009 026 9/2  
UNIVERSITY OF SOUTHERN CALIFORNIA MARINA DEL REY  
INFORMATION SCIENCES INST

A Fast Approach to Computer System  
Performance Prediction.

(U)

DESCRIPTIVE NOTE: Research paper,  
74 14P Kimbleton, Stephen R. ;  
CONTRACT: DAHC15-72-C-0308, N00014-67-A-0181-0036  
PROJ: ARPA Order-2223, NR-049-311

UNCLASSIFIED REPORT

Availability: Pub. in Conference of Computer  
Architectures and Networks, IRIA (France), Aug  
74, p251-262 1974.

DESCRIPTORS: \*Information systems, \*Computer  
architecture, Systems engineering, Predictions,  
Input output processing, State of the art,  
Reprints

(U)

Computer system performance has been intensively  
studied over the last five years. Nevertheless, few  
would be inclined to regard the current state of the  
art with satisfaction. In part, this would appear  
to be due to the failure to clearly distinguish  
between organizational and technological issues in  
performance. This paper discusses the nature of  
technological issues in performance and observes that  
a major requirement for the development of an  
appropriate solution methodology is a capability for  
rapid prediction of system performance. One means  
of achieving this capability is through analytical  
driven simulation techniques. An implementation of  
such an approach is described and observations  
resulting from this implementation are discussed.  
(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A008 558 9/3  
NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER BETHESDA  
MD

Pressure-Tolerant Device Technology State  
of the Art.

(U)

DESCRIPTIVE NOTE: Research and development rept.,  
MAY 75 64P Pugliese, V. W. ; Gilbert, D.  
E. ;  
REPT. NO. NSRDC-4297  
PROJ: XF54-545  
TASK: XF54-545-010

UNCLASSIFIED REPORT

DESCRIPTORS: \*Underwater equipment, \*State of the  
art, Electronic equipment, Electrical equipment,  
Pressure, Deep depth, Housings (Enclosures),  
Tolerance, Hydrostatic pressure, Semiconductor  
devices

(U)

The report describes the research effort devoted to  
the study and development of a device and material  
technology to provide electronic and electrical  
components, circuits, and equipment that will operate  
successfully in the ocean environment without the  
need for pressure shell protection. The work has  
been concerned with: (1) identification and  
evaluation of device problem areas, (2)  
development of technology to be used to prevent  
device failures, and (3) identification and  
evaluation of system requirements. Its purpose is  
to document, in a logical manner, the results of the  
work in determining the influences of an oil/pressure  
environment on contemporary electronic/electrical  
components and systems.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A008 552 17/2

JOINT TACTICAL COMMUNICATIONS OFFICE FORT MONMOUTH N J

TRI-TAC Technology Forecast.

(U)

DESCRIPTIVE NOTE: Final rept.

OCT 74 171P

REPT. NO. T10-ORT-035-74

UNCLASSIFIED REPORT

DESCRIPTORS: \*Tactical communications, \*State of the art, \*Forecasting, Fiber optics, Laser communications, Voice communications, Digital systems, Power supplies, Communication satellites, Switching, Memory devices, Communication equipment, Microelectronics, Information processing

(U)

The report presents the documentation of interviews, a literature review, and technology forecasts which relate to the state-of-the-art of military tactical communication systems for the 1975-1980 time frame. The interviews were conducted at various Government laboratories and selected industry facilities. Technical areas for which forecasts were made include microelectronics, computers/switching, satellite subsystems, optical communication, power sources, RF power generation, and information processing. Most technological projections that are documented have been obtained from the interview and literature sources. Independent assessment and forecasting have been limited to assessing the impact of rapidly improving technologies on the development of future tactical military communication equipment.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A007 152 1/5

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL

Pavement Functional Condition

Indicators.

(U)

DESCRIPTIVE NOTE: Final rept.,

FEB 75 96P

Michael I.; Shahin, Mohamed Y.; Darter,

REPT. NO. CERL-TR-C-15

PROJ: DA-4-A-664717-D-895

TASK: 4-A-664717-D-89504

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Condition Indicators for Military Pavements.

DESCRIPTORS: \*Pavements, \*Runways, \*Skidding, Military facilities, Performance (Engineering), Roughness, Slope, Test methods, Indicators, State of the art, Friction, Measurement, Acceptability

(U)

(U)

IDENTIFIERS: Service life

Functional performance is defined as the trend of the level of service provided to the pavement users through the initial life of the pavement and between major rehabilitations. The information presented in this report includes: (1) Identification of pavement functional condition indicators; (2) state of the art of measuring and evaluating the most significant functional indicators (roughness and skid resistance); and (3) preliminary concepts for incorporating functional consideration into pavement life-cycle analysis. The report covers pavements in general, with special consideration given to airfields.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A006 197 20/5  
RENSSELAER POLYTECHNIC INST TROY N Y

Problems of the Gamma Ray Laser.

(u)

DESCRIPTIVE NOTE: Rept. for 1 May 73-1 Jun 74,  
AUG 74 145P Baldwin, George C. ;  
CONTRACT: D-31-124-73-G162  
PROJ: DA-1-1-10:102-B-11-A  
MONITOR: BRL CR-179

UNCLASSIFIED REPORT

DESCRIPTORS: \*Lasers. Gamma rays. State of the  
art, Nuclear isomers. Resonance absorption,  
Optical pumping. Crystal lattices, Nuclear mome  
IDENTIFIERS: \*Gamma ray lasers

(u)  
(u)

This report is addressed to the problem of the  
state-of-the-art of gamma ray laser development.  
It is intended to identify the various disciplines  
and specific research areas which can best contribute  
to resolving the question of 'graser' feasibility.  
Topics discussed include the following: The  
basic mechanisms of laser action; Gamma ray  
emission from nuclear isomers; The resonance cross  
section; Nonresonant absorption; Photon kinetics;  
Inhomogeneous line broadens; Problems of  
pumping.

(u)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A005 708 8/11  
TELEDYNE GEOTECH GARLAND TEX

Strain/Inertial Seismograph Complexes.

(u)

DESCRIPTIVE NOTE: Technical rept.,  
MAR 74 302P Fix, James E. ;  
REPT. NO. TR-73-16  
CONTRACT: F08606-73-C-0008  
PROJ: AFTAC-T/3703

UNCLASSIFIED REPORT

DESCRIPTORS: \*Seismology. \*Seismometers.  
Seismographs, Rayleigh waves. Seismic waves,  
Signal to noise ratio, Strain gages,  
Performance(Engineering). Nuclear explosions,  
Earthquakes, Seismic arrays, Seismic detection,  
State of the art, Installation, Digital recording  
systems, Costs

IDENTIFIERS: Love waves, Seismic noise  
(u)  
(u)

The purposes of this report are to present the  
results of a comprehensive review of the state-of-  
the-art of strain seismographs and their applications  
and to present the cost/performance tradeoffs between  
spatial arrays and strain/inertial arrays. The  
review included: strain seismometer operating  
characteristics, present designs, and possible future  
designs; installation methods, techniques, and  
configurations; applications of combined strain and  
inertial seismograms including detection thresholds  
of the prototype station; the character and magnitude  
of the strain noise field; and budgetary costs for  
typical installations.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A005 530 6/5 5/10  
NAVY MEDICAL NEUROPSYCHIATRIC RESEARCH UNIT SAN DIEGO  
CALIF

A Consideration of the State of the Art of  
Diagnosis in Real Clinical Settings. (U)

MAY 74 9P Edwards, Darrel ; Fichman, J.  
Susan ; Bucky, Steven F. ; Berry, Newell H. ;  
REPT. NO. N7NRU-73-18  
PROJ: MF51-524  
TASK: MF51-524-002

## UNCLASSIFIED REPORT

Availability: Pub. in The Jnl. of Psychology,  
87 p305-310 1974.

DESCRIPTORS: \*Diagnosis(Medicine). \*Psychiatry.  
\*Clinical medicine. State of the art, Demography,  
Behavior, Hospitals, Psychoses, Neuroses,  
Psychotherapy, Personality. Reprints (U)

In 1966 the International Classification of Diseases, Eighth Revision, with its controversial Section V was adopted by the Nineteenth World Health Assembly for use in member states beginning in 1968. An examination of the initial use of the new system indicated that label differences might be affecting diagnosis in psychiatric cases. This study examined a number of demographic and behavioral variables in order to arrive at a decision concerning the efficacy of psychiatric diagnosis. Diagnosis was found to be a major predictor of industrial effectiveness in a military setting. Psychiatric dispositions were determined on the basis of diagnosis. When the correlates of diagnostic classes were examined, no stable profile could be found. A factor analysis of diagnosis, demography, and behavioral information indicated that diagnostic categories defined rather unique factors in the total clinical picture of a patient. It was concluded that diagnosis is a useful clinical tool, but that the elements constituting a diagnostic impression are not essentially historical in nature. (Author) (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A005 375 5/2  
DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA

State-of-the-Art Reviews. (U)

DESCRIPTIVE NOTE: Report bibliography Feb 47-May 74.  
FEB 75 281P  
REPT. NO. DDC-TAS-74-41

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Scientific research, \*Bibliographies,  
Reviews, State of the Art, Aircraft equipment,  
Chemistry, Data processing, Computers, Medical  
research, Naval vessels, Flight instruments,  
Holography, Lasers, Microelectronics,  
Oceanography, Structural engineering (U)

This bibliography contains 229 references pertinent to the evaluation and results of surveys, studies, and literature searches in the state-of-the-art reviews of selected subjects. The indexes included are Corporate Author-Monitoring Agency and Subject. (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A005 225 13/2 5/3  
BOVET (ERIC D) ALEXANDRIA VA

Evaluation of Quality Parameters in Water  
Resource Planning. (A State-of-the-Art  
Survey of the Economics of Water  
Quality).

(U)

DESCRIPTIVE NOTE: Final rept.,  
DEC 74 264P Bovet, Eric D. ;  
CONTRACT: DACW01-73-C-0043  
MONITOR: IWR CR-74-13

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Water quality, \*Water supplies,  
\*Economics, Water pollution, Sewage treatment,  
Waste water, Allocations, Chemical properties,  
Bacteria, Costs, Purification, State of the art,  
Reviews

(U)

IDENTIFIERS: \*Water economics, Water  
purification

(U)

This report reviews water quality from the  
standpoint of determining the influence of water  
contaminants on various uses of water, the technology  
and cost of water supply purification, the technology  
and cost of waste and recycling water purification,  
the benefits from enhanced water quality, economic  
techniques for optimal water supply purification and  
allocation, and economic techniques for optimal waste  
and recycling water purification. The intent of  
the report is to provide Corps of Engineers and  
other planners with a summary and critique of the  
literature and a synopsis of relevant methodology  
which relates water quantity and water quality.  
Economic cost and benefit calculations are stressed  
along with optimizing procedures.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A001 101 1/3 8/13  
KAMAN AEROSPACE CORP BLOOMFIELD CONN

Mechanical Instability Ground Dynamics  
Program.

(U)

DESCRIPTIVE NOTE: Final rept.,  
MAR 74 61P Metzger, Ross F. ;  
REPT. NO. R-1249  
CONTRACT: N00019-73-C-0460

## UNCLASSIFIED REPORT

## SUPPLEMENTARY NOTE:

DESCRIPTORS: \*Helicopters, \*Soil dynamics,  
Instability, Soil models, State of the art,  
Mechanical impedance  
IDENTIFIERS: H-2 aircraft, UH-2 aircraft

(U)

(U)

A state-of-the-art survey has been performed to  
determine if any work has been performed which  
associates soil dynamics with mechanical instability  
in helicopters. None was found. No data  
pertaining to the range of near surface soil dynamic  
properties were found. A method of determining the  
mechanical stability of a helicopter in contact with  
the soil has been developed. A parametric study  
has been performed to examine the UH2 helicopter  
under conditions of a range soil properties. It  
was found that there are ranges of parameters which  
will cause mechanical instability. It is  
recommended that a program be initiated to obtain  
quantitative near surface dynamic characteristics of  
representative soils through field testing.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 916 001 14/4 5/1  
BOEING CO SEATTLE WASHLife Cycle Cost/System Effectiveness  
Evaluation and Criteria.

(U)

JAN 74 71P Walker, G. A. ;  
REPT. NO. D180-17648-1

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*Life cycles, Costs), (\*Cost analysis, State of the art), (\*Cost effectiveness, Management planning and control), Reliability, Maintenance, Maintainability, Logistics support, Acquisition, Procurement, Operation, Computer programs, Data bases, Quality assurance, Planning, Manpower, Training, Research management, Aircraft, Guided missiles, Bibliographies

IDENTIFIERS: Design, Systems worth, \*Life cycle costs

(U)

(U)

This document contains results of an independent research and development task on life cycle cost performed by Boeing Aerospace Company. This seven month study is Phase I of a planned continued effort and includes discussion on life cycle cost current state-of-the-art, a planned approach and recommendations on where emphasis should be placed to effectively perform cost analysis studies on new systems. Included is a bibliography of 160 documents relevant to life cycle cost, and an evaluation of 14 computer programs which provided the data base from which cost consideration elements and new criteria were developed. (Author)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 915 151 15/7 13/6 19/3  
FRANKLIN INST RESEARCH LABS PHILADELPHIA PAModel Study of Instant Vehicular  
Camouflage.

(U)

DESCRIPTIVE NOTE: Final rept.,  
OCT 73 65P Bressler, Peter ;

DeBenedictis, John A. ;  
REPT. NO. F1RL-F-C3547-5  
CONTRACT: DAAD05-73-C-0140  
PROJ: DA-1-G-663702-D-471  
TASK: 1-G-663702-D-47101  
MONITOR: LWL CR-21C73

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*Camouflage, Military vehicles), State of the art, Reviews, Feasibility studies, Shape, Distortion, Deception, Foliage, Coatings, Colors, Paints, Plastics, Decoys, Wire, Terrain, Surface targets, Foam, Models, Inflatable structures, Reflectors, Carbon dioxide, Cartridges, Trees, Plants (Botany), Tanks (Combat vehicles), Deployment, Fluorescence, Liquid crystals, Fresnel lens, Optical images, Acoustics, Holography

IDENTIFIERS: \*Instant camouflage, Infrared paints, Foam nets, Plastic foliage kits, Spring loaded foliage, Wire nets

(U)

(U)

A feasibility study to determine what materials and geometric systems would be required for fabrication of a camouflage system that would instantaneously cover a military vehicle in order to disrupt its characteristic shape or outline. The program involved intensive research and field trips in which the state-of-the-art of modern camouflage was studied; conception of numerous camouflage systems from the research and group synthesis process; production of prescribed models and diagrams; and analysis of systems and conclusions as to their feasibility. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 912 698 20/5 20/6  
FRANKFORD ARSENAL PHILADELPHIA PA

Cooled Metal Laser Mirrors - State-of-the-Art Review.

DESCRIPTIVE NOTE: Memorandum rept.,

JUN 73 28P Cytron, Sheldon J. ;  
REPT. NO. FA-W73-17-1

## UNCLASSIFIED REPORT

DESCRIPTORS: (=LASERS, STATE-OF-THE-ART REVIEWS), (=MIRRORS, LASERS), COOLING, METALS, SURFACES, CONSTRUCTION, MANUFACTURING, ASSEMBLY, OPTICS, HEAT TRANSFER, DESIGN, COATINGS, QUALITY CONTROL, TRACKING, BEAMS(ELECTROMAGNETIC), DISTORTION, REFLECTION, HEAT FLUX, EFFECTIVENESS, CONVECTION(HEAT TRANSFER), STRUCTURAL MEMBERS, THERMAL EXPANSION, REFLECTIVITY, POLISHES, OPTICAL EQUIPMENT COMPONENTS (U)

This report is a state-of-the-art review of cooled metal laser mirror technology. The design philosophy and parametric tradeoffs underlying cooled laser mirror designs are presented. Various construction aspects of cooled metal laser mirrors are discussed, along with the fabrication techniques employed in the assembly of the mirror. Areas that need further developmental work are reviewed, and recommendations for specific study and development efforts are made to deal with future laser mirror requirements. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 910 179 20/5 20/5  
AIR FORCE WEAPONS LAB KIRTLAND AFB N MEX

New Gas Lasers Committee Report on Electronic Transition Chemically and Electrically Excited Lasers. Meeting of 20-22 September 1972. (U)

DESCRIPTIVE NOTE: Technical rept. 1 Sep-1 Dec 72,  
MAR 73 43P Wilson, Leroy E. ; Benson,  
Sidney ; Cool, Terry ; Javan, Ali ; Kuppermann, Aron ;

REPT. NO. AFWL-TR-73-60

PROJ: AF-3326

TASK: 332606

## UNCLASSIFIED REPORT

DESCRIPTORS: (=GAS LASERS, \*INFRARED LASERS), SYMPOSIA, STATE-OF-THE-ART REVIEWS, PUMPING(ELECTRONICS), ELECTRON TRANSITIONS, EFFICIENCY, LIFE EXPECTANCY, GAIN, DIATOMIC MOLECULES, OXIDES, HALIDES, HYDROXIDES, CONSTRUCTION, ULTRAVIOLET SPECTRA, VISIBLE SPECTRA, EXCITATIONS, MAGNESIUM, CESIUM, CALCIUM, CHEMICAL REACTIONS, STRONTIUM, CHEMILUMINESCENCE, BARIUM, FLAMES, BORON, INFRARED PULSES, ALUMINUM, GALLIUM, INDIUM, THALLIUM, TIN, LEAD(METAL), RARE EARTH ELEMENTS, DESIGN IDENTIFIERS: CHEMICALS, PUMPS, \*CHEMICAL LASERS, \*ELECTRONIC TRANSITION LASERS (U) (U)

This report summarizes the ideas generated by a committee of consultants. The purpose of the meeting was to recommend an approach for finding new efficient gas lasers where the inversion is obtained from an electronic transition of the gas. Probable criteria such as quantum efficiency, concentration, lifetime, gain, etc., have been suggested for a suitable system to aid in sorting among the many possible candidates. The most promising diatomic candidates that should be screened are molecular radicals (like CS; OH) and the oxides and halides of Mg, Ca, Sr, Ba, B, Al, Ga, In, Tl, Sn, Pb, and the rare earths. Several experimental and theoretical approaches are suggested that would yield information, such as radiative lifetimes, amount of population inversion, and energy branching ratios, necessary to permit the construction of a laser system. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 909 137 17/1 9/2  
TRACOR INC AUSTIN TEXMobile Sonar Technology Information  
Bank.

(U)

DESCRIPTIVE NOTE: Final rept..  
 APR 73 75P Bardin, J. L. ;  
 REPT. NO. T73-AU-9537-U  
 CONTRACT: N00024-71-C-1132  
 PRGJ: SF111-111, TRACOR-037-001-01  
 TASK: SF111-111-500, 12851

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*SONAR, \*INFORMATION RETRIEVAL), (\*SUBJECT INDEXING, \*SONAR EQUIPMENT), (\*TECHNICAL INFORMATION CENTERS, SONAR), DATA STORAGE SYSTEMS, DOCUMENTS, REPORTS, VOCABULARY, INDEXES, STATE-OF-THE-ART REVIEWS, PREPARATION, FEASIBILITY STUDIES, DICTIONARIES, CODING, CLASSIFICATION, COMPUTATIONAL LINGUISTICS (U)  
 IDENTIFIERS: DATA BANKS, \*DESCRIPTIVE WORD SYSTEMS FACETED CLASSIFICATION, DIST, \*MOBILE SONAR TECHNOLOGY, MULTIDIMENSIONAL SUBJECT RETRIEVAL, SIGNAL PROCESSING (U)

This report describes the development of the basis for a mobile sonar technology information storage and retrieval system which will induce centralization of the appropriate documents into a library and will provide a reasonable method of access to the desired documents. The work described has produced a concept which has been named the 'descriptive word' approach to information storage and retrieval. The development of the descriptive word system involved first the organization of mobile sonar technology into ten categories which were derived from an overview of the physical process of a sonar system operating in its intended environment; the categories were further subdivided. Next, elements to describe other aspects of a document were generated. These are the sonar function concerned with the general orientation of the subject, the key words, and finally the notation of any specifically designated sonar systems. (Author) (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 908 037 20/6 19/5 9/5  
NAVAL ELECTRONICS LAB CENTER SAN DIEGO CALIFIntegrated Optical Circuits in Avionics  
Systems. Volume 1.

(U)

DESCRIPTIVE NOTE: Research and Development rept. 1  
 Jan-1 Jun 72, NOV 72 54P Poulson, J. F. ; Lindgren, T. P. ; Taylor, H. F. ;  
 REPT. NO. NELC-TR-1846-Vol-1  
 PROJ: RR014-11, NELC-F212  
 TASK: RR014-11-04

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-524 558.  
 DESCRIPTORS: (\*ELECTROOPTICS, \*AIRCRAFT FIRE CONTROL SYSTEMS), (\*ADVANCED WEAPONS, ELECTROOPTICS), (\*INTEGRATED CIRCUITS, OPTICAL EQUIPMENT), NAVAL AIRCRAFT, JET FIGHTERS, ATTACK BOMBERS, ANTISUBMARINE AIRCRAFT, SEMICONDUCTOR DEVICES, LOGIC CIRCUITS, MULTIPLEXING, WAVEGUIDES, LASERS, STATE-OF-THE-ART REVIEWS, PLANNING, OPTICAL COMMUNICATIONS, OPTICAL EQUIPMENT, DATA TRANSMISSION SYSTEMS, COSTS, COST EFFECTIVENESS, MODULATION, WEIGHT, NAVIGATION, INTEGRATED SYSTEMS (U)  
 IDENTIFIERS: \*AVIONICS, \*A-7 AIRCRAFT, \*F-14 AIRCRAFT, HEADS UP DISPLAY, \*INTEGRATED CIRCUITS, \*OPTICAL EQUIPMENT, \*S-3 AIRCRAFT (U)

An integrated optical circuit is a transparent substrate upon which different types of electro-optic components and optical waveguide interconnections are fabricated. Some components which might be contained in IOC's are optical sources, detectors, amplifiers, logic elements, switches, filters, directional couplers, and fan-in/fan-out elements. The avionics systems on three representative naval aircraft (A-7E, S-3A and F-14A) were studied to identify design trends, degree of system integration, and the areas in which IOC technology might apply. On the basis of information obtained in the aircraft survey, a prediction of 1980 avionics-system requirements was developed. A literature search was conducted to determine the extent and objectives of current developments in IOC technology, and obtain a data base for predicting trends in IOC research and avionics design. (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 907 528 13/10  
NAVAL MATERIAL COMMAND WASHINGTON D CDeep Ocean Technology Project Development  
Objectives Assessment. Volume I.

(U)

DESCRIPTIVE NOTE: Final rept.,  
OCT 72 344P Greenert, William J. ; Witt,  
Benjamin F. ;  
PROJ: S46-36X

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*MARINE ENGINEERING, NAVAL RESEARCH), OCEANS, DEEP WATER, OCEAN BOTTOM, CONSTRUCTION MATERIALS, CONSTRUCTION, STRUCTURES, BALLAST, HYDRAULIC EQUIPMENT, UNDERWATER VEHICLES, DEEP SUBMERGENCE, ELECTRIC POWER PRODUCTION, ELECTRIC CABLES, UNDERWATER PROPULSION, POWER SUPPLIES, UNDERWATER COMMUNICATION SYSTEMS, INSTRUMENTATION, DISPLAY SYSTEMS, TRANSPORTATION, LIFE SUPPORT, PLANNING, STATISTICAL ANALYSIS, DECISION MAKING, COSTS (U)

IDENTIFIERS: DEEP OCEAN TECHNOLOGY, DEEP OCEAN TECHNOLOGY PROJECT, DEEP SUBMERGENCE VEHICLES, DOT(DEEP OCEAN TECHNOLOGY) (U)

The Deep Ocean Technology (DOT) Project has as general requirements the definition, analysis, and development of the technological state-of-the-art for ocean engineering in the deep ocean environment. The specific requirements for the DOT Project are that there be adequate demonstrated technology options available to support the specific operational requirements for deep ocean programs which are generated in the foreseeable future. Such options are those specific technology developments required to achieve operational systems that will fulfill the Navy's future requirements in manned and unmanned subsurface work systems, seafloor construction systems, and weapons support systems. Within these bounds the question naturally arises--what options are the most suitable and how should their development be undertaken. After four years of project objectives, and in view of past and current funding limitations, it appeared necessary to reassess the DOT Project development programs to ensure that the most cost-effective approaches were being taken. (U)

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CDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 907 523 9/1 17/2 13/10  
GENERAL DYNAMICS CORP GROTON CONN ELECTRIC BOAT DIV

Display Systems State of the Art.

(U)

DESCRIPTIVE NOTE: Final rept.,  
AUG 72 94P Piehler, D. ; Hirshberg, N. ;  
REPT. NO. U440-72-081  
CONTRACT: N00014-68-C-0392  
PROJ: NR286-001-5

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*DISPLAY SYSTEMS, STATE-OF-THE-ART REVIEWS), (\*COMMAND AND CONTROL SYSTEMS, SUBMARINES), CATHODE RAY TUBES, PHOTODIODES, LIQUIDS, CRYSTALS, PLASMAS(PHYSICS), FERROELECTRIC MATERIALS, DRIVES, COLORS, VOICE COMMUNICATIONS, ELECTROOPTICS, SPEECH RECOGNITION, FIRE CONTROL SYSTEMS, SONAR EQUIPMENT, MAINTENANCE, MONITORS, BIBLIOGRAPHIES, DESIGN IDENTIFIERS: DATA PROCESSING TERMINALS, HOLOGRAPHY, LIGHT EMITTING DIODES, LIQUID CRYSTALS, PORTED CATHODE RAY TUBES, Most Project-3 (U)

This report presents an overview of the current and projected state of the art in information display systems as they relate to submarine command and control. Included are a discussion of the principles of operation, applications, development status of such diverse displays as cathode ray tubes, light emitting diodes, liquid crystals, plasmas, ferroelectric devices, and others. Characteristics of the electronic devices required to drive these displays are given. Sections are included on the principles of subjective color and the use of computer speech as a mode of display interaction. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 906 267 20/6

GENERAL ELECTRIC CORPORATE RESEARCH AND DEVELOPMENT  
SCHENECTADY N Y

Structural Characterization of Materials by  
Use of Electron Microscopy and Spectroscopy. (U)

DESCRIPTIVE NOTE: Technical information series,

JAN 71 53P Phillips, V. A.; Lifshin,

Eric ;

REPT. NO. 71-C-029

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ELECTRON MICROSCOPY, \*STATE-OF-THE-ART  
REVIEWS), OPTICAL ANALYSIS, SCIENTIFIC RESEARCH,  
MICROSCOPY, ELECTRON OPTICS, RESOLUTION, SCANNING,  
VOLTAGE, COMPUTERS, CONTROL SIMULATORS, IMAGE  
INTENSIFIERS(ELECTRONICS), ENERGY, ANALYSIS, DAMAGE,  
RADIATION EFFECTS, X RAY ABSORPTION ANALYSIS, X RAY  
DIFFRACTION, LUMINESCENCE, MATERIALS (U)  
IDENTIFIERS: ELECTRON SPECTROSCOPY, ENERGY ANALYZING  
MICROSCOPY, HIGH VOLTAGE MICROSCOPY, LATTICE  
RESOLUTION, LATTICES(MATHEMATICS), ELECTRON  
MICROSCOPY, ELECTRONIC SCANNERS (U)

The present status of the techniques of  
conventional electron microscopy, energy analyzing  
and energy selecting microscopy, direct resolution  
microscopy, high-voltage microscopy, and scanning  
electron microscopy is critically discussed and  
future trends are indicated. The basic principles  
of each technique and types of application are  
reviewed. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 905 663 11/3 20/6 1/3 17/7

ARMY COATING AND CHEMICAL LAB ABERDEEN PROVING GROUND  
MD

Coatings for Infrared Signature Control of  
Helicopters. (U)

DESCRIPTIVE NOTE: Memorandum rept.,

SEP 72 McLeskey, J. J. , III;

REPT. NO. CCL-MR-4

PROJ: DA-1-F-166605-AA-52

TASK: 1-F-166605-AA-5203

UNCLASSIFIED REPORT

DESCRIPTORS: (\*COATINGS, \*INFRARED RADIATION),  
(\*HELICOPTERS, PAINTS), (\*HEAT HOMING, VULNERABILITY),  
(\*AIRCRAFT FINISHES, HELICOPTERS), INFRARED SPECTRA,  
COLORS, COSTS, STATE-OF-THE-ART REVIEWS, ABSORPTION,  
EMISSION, IRON OXIDES, SURVIVAL(PERSONNEL), SOURCES,  
SPECTRUM SIGNATURES, CARBON, HYDROGEN, CHEMICAL BONDS,  
CARBON BLACK, PIGMENTS, REFLECTIVITY, TITANIUM,  
DIOXIDES (U)  
IDENTIFIERS: \*INFRARED SIGNATURES, \*INFRARED COATINGS,  
NEAR INFRARED REGION (U)

This report reviews the state-of-the-art in coating  
design for control of the infrared signature of  
helicopters. Past work is summarized and current  
work identified. The feasibility of using low  
emittance coatings is discussed. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 889 087 13/10 13/13  
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF

Seafloor Pile Foundations: State-of-the-Art, and Deep-Ocean Emplacement Concepts. (U)

DESCRIPTIVE NOTE: Technical note Jul 70-Apr 71,  
OCT 71 30P Raecke,D. A. ;Migliore,H.J. :  
REPT. NO. NCEL-TN-1182  
PROJ: YF38.535.004.01.002

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*FOUNDATIONS(STRUCTURES), OCEAN BOTTOM),  
(\*ANCHORS(STRUCTURAL), DEEP WATER), DESIGN, DRILLING,  
HAMMERS, UNDERWATER EQUIPMENT, VIBRATORS(MECHANICAL),  
EXPLOSIVES, ACCEPTABILITY, CONSTRUCTION, COSTS, STATE-  
OF-THE-ART REVIEWS (U)  
IDENTIFIERS: \*PILE FOUNDATIONS (U)

A review of the state-of-the-art of the emplacement and design of seafloor pile foundations/anchors was conducted. Several concepts for emplacement mechanisms suitable for use in water depths to 6,000 feet were considered, and a preliminary effectiveness evaluation of the mechanisms was conducted to reduce the number of systems for further investigation. The state-of-the-art review indicates that marine drilling techniques and equipment could be readily adapted for deep-ocean pile emplacement for a very near-term requirement; however, the use of such a method would be quite costly. Other pile emplacement systems are presently limited to depths of about 1,000 feet by the need for relatively large amounts of power. Development of a 6,000-foot pile foundation/anchorage emplacement capability is not limited by any need to develop novel mechanical equipment. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 888 815 13/2 1/5  
AIR FORCE WEAPONS LAB KIRTLAND AFB N MEXContinuously Reinforced Concrete Pavement.  
The State of the Art. (U)DESCRIPTIVE NOTE: Technical rept. Sep 70-Sep 71,  
OCT 71 99P York,Guy P. ;  
REPT. NO. AFWL-TR-71-102  
PROJ: AF-683M

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*PAVEMENTS, \*REINFORCED CONCRETE),  
(\*RUNWAYS, PAVEMENTS), STATE-OF-THE-ART REVIEWS,  
REINFORCING MATERIALS, STEEL, DESIGN (U)  
IDENTIFIERS: \*CONTINUOUSLY REINFORCED CONCRETE  
PAVEMENTS (U)

The report presents the state of the art of continuously reinforced concrete (CRC) pavement and the feasibility and desirability of constructing this type of pavement on USAF air bases. It is the result of a thorough review of the literature, field investigations of highway and airport CRC pavements, and discussions with the foremost experts in the field. It includes a discussion of the characteristics and performance of CRC pavements and current design procedures. It concludes that the Air Force should begin constructing new and overlay airfield pavements with CRC, but also that additional research is required to improve design criteria. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 888 286 9/5  
PHILCO-FORD CORP BLUE BELL PA MICROELECTRONICS DIVProcedural Guidelines for the Reliability  
Assessment of MOS Microcircuits.

(U)

DESCRIPTIVE NOTE: Final rept. Jun 69-Mar 71,

SEP 71 212P Ewald, Henry J. ;

REPT. NO. FSC-A7D2

CONTRACT: F30602-69-C-0252

MONITOR: RADC TR-71-178

UNCLASSIFIED REPORT

DESCRIPTORS: (-INTEGRATED CIRCUITS,  
RELIABILITY(ELECTRONICS)), SEMICONDUCTOR DEVICES, STATE-  
OF-THE-ART REVIEWS, FAILURE(ELECTRONICS)  
(U)  
IDENTIFIERS: METAL OXIDE SEMICONDUCTORS,  
MICROELECTRONICS  
(U)

The objective of this study program was the development of a set of procedural guidelines for effectively assuring, predicting and assessing the reliability of MOS integrated circuits. The end product of the study was a set of recommendations for additions or modifications to portions of MIL-STD-883 as they would apply to the screening and reliability verification of MOS IC's. The two approaches to the investigation included, first, a canvass of the industry, both manufacturers and users of MOS IC's, combined with a proposal for an optimized and practical set of screens and reliability verification procedures based upon in-house experience as well as upon the response to the industry canvass. The second approach was to select a moderately complex test vehicle, namely the dual-fifty bit shift register using the 'p' channel enhancement mode of operation. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 888 218 17/3 17/7 17/2.1  
ILLINOIS UNIV URBANA RADIOLOCATION RESEARCH LABProceedings of the Allerton-House Conference  
(4th) on HF Radio Direction Finding and  
Radiolocation Research.

(U)

DESCRIPTIVE NOTE: Final rept.,

SEP 71 435P Bailey, A. D. ;

REPT. NO. RRL-PUB-392, UILLU-ENG-71-2542

CONTRACT: N00014-71-C-0221

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DIRECTION FINDING, \*SYMPOSIA), (\*POSITION  
FINDING, \*RADIO EQUIPMENT), HIGH FREQUENCY, RADIO WAVES,  
PROPAGATION, RADIO TRANSMISSION, ANTENNAS, RADIO  
RECEIVERS, COMPUTERS, DISTANCE MEASURING EQUIPMENT,  
IONOSPHERIC DISTURBANCES, RADIOFREQUENCY INTERFERENCE,  
ANGLE OF ARRIVAL, NOISE(RADIO), MODELS(SIMULATIONS),  
SIMULATION, INSTRUMENTATION, STATE-OF-THE-ART REVIEWS,  
RADIO INTERFEROMETERS  
(U)

The purpose of this conference is to promote discussion between Governmental, Educational and Industrial Groups on the 'State-of-the-art' and Science of Radio Direction Finding, Radio Position Finding, Directional Radio Propagation; and to explore, where possible, the future direction of these research efforts, based on user requirements. The General Theme of this Conference: 'D/F in the Seventies' with subtopics: (1) RDF Systems, (2) Radiolocation Systems, (3) Modeling and Simulation Studies, (4) HF Directional Propagation Research, (5) Instrumentation. (Author) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 884 439 1/3  
CORNELL AERONAUTICAL LAB INC BUFFALO N Y FLIGHT RESEARCH  
DEPT

Background Information and User Guide for  
MIL-F-83300-Military Specification --  
Flying Qualities of Piloted V/STOL  
Aircraft.

DESCRIPTIVE NOTE: Final rept.,  
MAR 71 469P Chalk, Charles R. ; Key,  
David L. ; Kroil, John , Jr. ; Wasserman, Richard  
; Radford, Robert C. ;  
CONTRACT: AF 33(615)-3736, F33615-70-C-1322  
PROJ: AF-698DC  
MONITOR: AFFDL TR-70-88

UNCLASSIFIED REPORT

DESCRIPTORS: (=VERTICAL TAKEOFF AIRCRAFT,  
PERFORMANCE(ENGINEERING)), (=SHORT TAKEOFF AIRCRAFT,  
SPECIFICATIONS). MILITARY REQUIREMENTS, STATE-OF-THE-ART  
REVIEWS, FLIGHT TESTING, HOVERING (U)

The specification was compiled after an extensive literature review and many meetings and discussions with personnel from essentially all concerned civilian and governmental organizations. The report attempts to explain the concept and philosophy underlying the V/STOL Specification and to present some of the data and arguments upon which the requirements were based. The document should also serve as a summary of the state of the V/STOL flying qualities art as determined from flight test, simulation, analysis, and theory. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 883 920 9/5 9/2  
MCDONNELL AIRCRAFT CO ST LOUIS MO RECONNAISSANCE LAB

Electronic Viewing for Image  
Interpretation. (U)

DESCRIPTIVE NOTE: Final rept.,  
MAR 71 306P Kozlowski, D. R. ; Jauer, R.

A. ;  
REPT. NO. MDC-A0783  
CONTRACT: N00019-69-C-0619

UNCLASSIFIED REPORT

DESCRIPTORS: (=SCREENS(DISPLAYS)), STATE-OF-THE-ART  
REVIEWS), DISPLAY SYSTEMS, LASERS, CATHODE RAY TUBES,  
TELEVISION DISPLAY SYSTEMS, PHOTOGRAPHIC FILM, HUMAN  
FACTORS ENGINEERING (U)  
IDENTIFIERS: ELECTROLUMINESCENCE, PANELS, ELECTRONIC  
DISPLAY SYSTEMS, HOLOGRAMS, HOLOGRAPHY, LIQUID CRYSTAL  
DISPLAY SYSTEMS, DISPLAY SYSTEMS, PHOTOCHROMISM,  
DISPLAY SYSTEMS, PLASMAS(PHYSICS) (U)

The purpose of the study was to evaluate the potential of recent electronic and electro-optical technology for meaningful assistance to the interpreter in the 1970-1980 decade. Functional requirements of the image interpreter (operator), as well as his psychophysical limitations were studied. The literature was researched for technological posture in optical viewing systems, laser and holographic displays, electronic viewing devices, storage and retrieval systems, and auxiliary devices and techniques. Based on this knowledge and on equipment tests, system evaluations and projections were made to arrive at recommended design concepts for the near future and to establish guidelines for future research and development in the application of electronic viewing to the interpretation task. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 880 384 9/2  
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J COMMUNICATIONS/  
ADP LAB

A Brief Survey of the History and Future  
Needs of Computer Systems, (U)

FEB 68 18P Cave, William C. ;  
REPT. NO. CADPL-74

UNCLASSIFIED REPORT

DESCRIPTORS: (\*COMPUTERS, STATE-OF-THE-ART REVIEWS),  
HISTORY, PROGRAMMERS, COMPUTER PROGRAMMING, PROGRAMMING  
LANGUAGES, INPUT OUTPUT DEVICES, SUBROUTINES, TELETYPE  
SYSTEMS, COMPUTER LOGIC, MEMORY DEVICES, COMPILERS, TIME  
SHARING, REAL TIME, DIGITAL COMPUTERS, DATA PROCESSING(U)  
IDENTIFIERS: COMPUTER PROGRAMS, FIRST GENERATION  
COMPUTERS, FORTRAN, LGP-30 COMPUTERS, MAGNETIC DRUM  
MEMORIES, ON LINE SYSTEMS, SCEPTRE PROGRAMMING  
LANGUAGE, SECOND GENERATION COMPUTERS, THIRD  
GENERATION COMPUTERS (U)

The purpose of the following discussion is to  
survey development and utilization of the computer by  
highlighting two pressing problems, development of  
expandable languages and expandable systems. It is  
convenient to unfold these problems via chronological  
discussion, and to this end generation numbers have  
been assigned. This, admittedly, is artificial, but  
serves well as a vehicle for the intended  
presentation. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 878 676 11/2 13/10 20/11 13/3  
11/4  
NAVAL SHIP RESEARCH AND DEVELOPMENT LAB ANNAPOLIS MD

State-of-the-Art Survey of Ferrocement. (U)

DESCRIPTIVE NOTE: Research and development rept.,  
JAN 71 38P Brauer, Frank E. ;  
REPT. NO. NSRDL/A-8-529  
PROJ: ZFXX-412  
TASK: ZFXX-412-001

UNCLASSIFIED REPORT

Availability: Microfiche copies only.

DESCRIPTORS: (\*CEMENTS, \*REINFORCED CONCRETE),  
(\*COMPOSITE MATERIALS, CEMENTS), (\*CONSTRUCTION  
MATERIALS, SHIPS), WIRE, REINFORCING MATERIALS, TENSILE  
PROPERTIES, FLEXURAL STRENGTH, MODULUS OF ELASTICITY,  
FATIGUE(MECHANICS), COMPRESSIVE PROPERTIES, SHEAR  
STRESSES, CORROSION RESISTANCE, IMPACT SHOCK, MECHANICAL  
PROPERTIES, SHOCK RESISTANCE, STATE-OF-THE-ART REVIEWS,  
CRACKS, DUCTILITY, STEEL, BONDING, CORROSION  
INHIBITION (U)  
IDENTIFIERS: \*FERROCEMENT, PORTLAND CEMENT (U)

From this literature study it was found that  
ferrocement is a composite material of superior  
mechanical properties when compared to reinforced  
concrete. This superiority is reflected in greater  
flexural crack strength, tensile strength, ductility,  
and impact strength. Much more research into the  
material properties of ferrocement must be done to  
fully understand the nature of the strengthening  
mechanism in ferrocement and to provide designers  
with comprehensive, reliable information necessary  
for the maximum utilization of ferrocement.  
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 870 900 9/5  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

Actual State and Perspectives of the  
Technology of Solid State Semiconductor  
Circuits and the Problem of Selecting the  
Optimum Technology for a Domestic Program,

(U)

MAY 70 22P Ambrozziak, Andrzej ;  
REPT. NO. FTD-HT-23-190-70  
PROJ: FTD-6019704  
TASK: DIA-T68-01-02

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Przegląd  
Elektroniki (Poland) v10 n7/8 p388-398 1969, by L.  
Marokus.

DESCRIPTORS: (\*INTEGRATED CIRCUITS, STATE-OF-THE-ART  
REVIEWS), DESIGN, STANDARDIZATION, POLAND  
IDENTIFIERS: TRANSLATIONS

(U)  
(U)

The first part of the paper describes tremendous  
progress in the production of semiconductor  
integrated circuits, particularly in the United  
States and Japan. Next, the standardization of  
technology and progress in designing of integrated  
circuits is described. Fourth part is devoted to  
obstacles encountered in development of the large  
scale integration. In conclusion, the situation in  
this century in the field of semiconductor integrated  
circuits is briefly described. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 870 890 19/1 7/4 15/7  
FRANKFORD ARSENAL PHILADELPHIA PA

Barrier/Counterbarrier Research. Molecular  
Sensing.

(U)

DESCRIPTIVE NOTE: Memorandum rept.,,  
MAR 70 26P Lannon, Joseph A. ; Salamon,

Robert ;  
REPT. NO. FA-W70-14-1  
PROJ: DA-1-J-6627708-A-462

UNCLASSIFIED REPORT

DESCRIPTORS: (\*MINE DETECTORS, GAS DETECTORS), (\*GAS  
DETECTORS, SENSITIVITY), (\*UNDERGROUND STRUCTURES,  
DETECTION), CONCENTRATION(CHEMISTRY), DETECTORS,  
DECOMPOSITION, GASES, GAS CHROMATOGRAPHY, GAS ANALYSIS,  
AIRBORNE, LAND MINES, UNDERGROUND, SAMPLING, SMELL,  
RESPONSE, EFFECTIVENESS, SELECTION, DETECTORS, ODORS,  
MASS SPECTROSCOPY, HUMANS, INFRARED SPECTROSCOPY,  
ULTRAVIOLET SPECTROSCOPY, STATE-OF-THE-ART REVIEWS,  
DIFFUSION

(U)

IDENTIFIERS: MOLECULAR SENSING, PERSONNEL DETECTORS,  
TUNNEL DETECTORS, TUNNELS UNDERGROUND STRUCTURES)

(U)

The purpose of this study was to draw a comparison  
between the sensitivities of present day chemical  
detectors and sensitivities which are needed for the  
detection of mines and tunnels. An attempt to  
determine the levels of concentration of effluents  
emanating from mines and tunnels is presented. The  
sensitivities of detectors used with chromatographs  
and of other direct detectors are given. From these  
sensitivities it appears that present day chemical  
detectors are not capable of detecting mines and  
tunnels. Research areas are suggested (especially  
the oily factory mechanism) which offer promise for  
detecting trace amounts of gas with orders of  
magnitude of more sensitivity and selectivity than  
present day detectors. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 869 528 14/2 13/2  
 ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
 MISS

Nondestructive Testing of Flexible  
 Pavements: A Literature Review.

DESCRIPTIVE NOTE: Technical rept. May 67-Jun 69,

MAY 70 35P Hall, J. W. ;

PROJ: AF-5224

TASK: 522403

MONITOR: AFWL TR-68-147

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PAVEMENTS, NONDESTRUCTIVE TESTING),  
 ROADS, LANDING FIELDS, DEFLECTION, VIBRATION,  
 FATIGUE(MECHANICS), MEASUREMENT, STATE-OF-THE-ART  
 REVIEWS, LOADS(FORCES), SOIL MECHANICS

(U)

A review of literature concerned with the nondestructive testing of flexible pavements, and two types of testing methods are presented in this report. The first method deals with the measurement of pavement response through the deflection of the pavement surface. Effect of the loading characteristics, pavement structure, and environment on measured deflections are discussed. Experience has shown that deflections of certain magnitudes are associated with failure. Bending strain has also been associated with failure through field measurements of radius of curvature of the deflection basin and through laboratory fatigue studies. The second method involves the application of a vibratory load to the pavement surface and determination of pavement response through deflection of the surface under a low-frequency vibration or by measurement of wave propagation at higher frequencies. The deflection of the pavement under the vibratory loading is used to determine dynamic stiffness, or type of spring constant, for the pavement structure. The wave velocity is used to arrive at a shear modulus and compression modulus of each pavement layer and the subgrade as well as thickness of each layer. Theoretical calculations involved and typical results are presented. Conclusions are made from findings in the literature, and recommendations are given for developing a method of nondestructive evaluation of flexible pavements. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 861 821 14/4 13/8  
 IIT RESEARCH INST CHICAGO ILL

Nondestructive Determination of Nonelectronic  
 Part Reliability.

(U)

DESCRIPTIVE NOTE: Final technical rept. 20 Feb 68-20  
 Feb 69,

OCT 69 81P Tobin, Henry G. ;

REPT. NO. IITRI-E6111-FR

CONTRACT: F30602-68-C-0210

PROJ: AF-5519, IITRI-E6111

TASK: 551902

MONITOR: RADC, IDEP TR-69-209, 347.40.00.00-F9-

01

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIR FORCE EQUIPMENT, VALUE ENGINEERING),  
 (-NONDESTRUCTIVE TESTING, DEFECTS(MATERIALS)), STATE-OF-  
 THE-ART REVIEWS, ENGINES, MOTORS, BEARINGS, RELAYS,  
 SOLENOIDS, ELECTRIC SWITCHES, GEARS, RELIABILITY, LIFE  
 EXPECTANCY, FAILURE(MECHANICS)

(U)

An investigation of the state-of-the-art of the application of nondestructive testing to the task of reliability screening and/or life estimation was carried out. Both the literature and industry were surveyed to allow an assessment of the feasibility of carrying out the screening or estimation tasks. Among the nondestructive methods investigated were eddy current, X-ray, ultrasonics, infrared, vibration analysis, penetrants, dyes, stains, films, cumulative and conventional strain gages, microwave, optical, and neutron radiography. Components studied included motors, bearings, relays, switches, solenoids, and gear trains. The study found that NDT methods are well advanced. However, insufficient information concerning the failure modes of the components studied limits the applicability of these methods to the screening or estimation process. The two components for which significant information is available are relays and bearings. Suggested methods by which reliability screening or life estimation can be accomplished are described.

(U)

(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 854 277 17/2 17/2.1 9/5 9/2  
RCA DEFENSE COMMUNICATIONS SYSTEMS DIV WEST WINDSOR N  
J

Project MALLARD Systems Study. Special  
Report on Switching. Volume I.

(U)

MAR 69 312P  
CONTRACT: DAAB07-68-C-0119  
PROJ: WBS-HA010301

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-854  
278L.

DESCRIPTORS: (\*COMMUNICATION SYSTEMS, TACTICAL WARFARE),  
(\*SWITCHING CIRCUITS, \*VOICE COMMUNICATIONS),  
(\*ELECTRONIC SWITCHES, \*DATA TRANSMISSION SYSTEMS), DATA  
STORAGE SYSTEMS, INTEGRATED CIRCUITS, QUEUEING THEORY,  
TRAFFIC, FLCA CHARTING, SCHEDULING, MEMORY DEVICES,  
COMMUNICATIONS CENTRAL, COMMAND AND CONTROL SYSTEMS,  
COMPUTER PROGRAMMING, MULTIPLEXING, TIME, ANALOG-TO-  
DIGITAL CONVERTERS, DELAY LINES, DIGITAL SYSTEMS,  
GATES(CIRCUITS), SHIFT REGISTERS, LOGIC CIRCUITS,  
COMMUNICATION AND RADIO SYSTEMS, RELAXATION OSCILLATORS,  
DATA PROCESSING, FIELD EFFECT TRANSISTORS, STATE-OF-THE-  
ART REVIEWS, COST EFFECTIVENESS, PLANNING,  
RELIABILITY(ELECTRONICS), AUTOMATIC, REDUNDANT  
COMPONENTS, DESIGN (U)  
IDENTIFIERS: LARGE SCALE INTEGRATED CIRCUITS, \*MALLARD  
PROJECT, FORECASTING, TECHNOLOGY, \*TIME DIVISION  
SWITCHES, TRADEOFFS (U)

This volume is divided into three major sections:  
The first presents a summary of the previously  
reported switch configuration trade-offs that  
resulted in the selection of the recommended  
Mallard Switch configuration. This is followed  
by a discussion on the selection of the multiple-  
highway configuration and the trade-offs involved.  
The next section outlines the present state-of-the-  
art in component technology. Projections for the  
1972 time-frame are also presented. The next part  
describes the design of the recommended Mallard  
Switch. A description of the associated software  
is also included. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 851 938 11/6 13/8 1/3  
BOEING CO SEATTLE WASH SPACE DIV

An Investigation of the Generation and  
Utilization of Engineering Data on  
Weldments.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
OCT 68 186P Hood, D. W. ;Eichenberger,  
T. W. ;Lovell, D. T. ;  
REPT. NO. D2-114287-1  
CONTRACT: F33615-67-C-1680  
PROJ: AF-7381  
TASK: 738106  
MONITOR: AFML TR-68-268

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRFRAMES, STRUCTURAL MEMBERS),  
(\*ALUMINUM ALLOYS, WELDS), (\*TITANIUM ALLOYS, WELDS),  
STANDARDIZATION, DESIGN, MODELS(SIMULATIONS), JOINTS,  
MANUFACTURING, TEST METHODS, STATE-OF-THE-ART REVIEWS,  
TENSILE PROPERTIES, COMPRESSIVE PROPERTIES, PIPES,  
PRESSURE VESSELS (U)  
IDENTIFIERS: ALUMINUM ALLOY 6061, EVALUATION, TITANIUM  
ALLOY 6AL 4V, WELDMENTS (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 844 288 9/3 9/2 13/8  
 GENERAL ELECTRIC CO SCHENECTADY N Y RESEARCH AND  
 DEVELOPMENT CENTER

Computerized Techniques for the Manufacture of  
 Integrated Electronic Systems. (U)

DESCRIPTIVE NOTE: Final technical rept. 15 Apr 67-15

May 68, 68 258P Chestnut, M. ; Segal, R. ;

REPT. NO. S-68-1152

CONTRACT: F33615-67-C-1569

PROJ: AF-531-78

MONITOR: AFNL TR-68-226

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*ELECTRONIC EQUIPMENT, DESIGN), (\*DESIGN,  
 AUTOMATION), MANUFACTURING, SYSTEMS ENGINEERING,  
 COMPUTERS, COMPUTER PROGRAMMING, INTEGRATED SYSTEMS, (U)  
 EFFECTIVENESS, STATE-OF-THE-ART REVIEWS (U)  
 IDENTIFIERS: COMPUTER AIDED DESIGN (U)

The study's objectives were to identify and demonstrate the areas where a computer can aid in the development and manufacture of electronic equipments, and to determine the scope, direction, and objectives of future work necessary to establish operational computerized techniques which effectively exploit the most advanced technologies available for the production of electronic systems. This report examines the manufacturing process from design through production, the environment for utilizing computer-aided techniques, the current state-of-the-art in application programs, and various pertinent hardware and software considerations. A concept referred to as DAMES (Design Automation for the Manufacture of Electronic Systems), an integrated system capable of providing computer assistance to a wide variety of users, has been formulated to overcome current limitations and provide a base for evolution and expansion to accommodate future needs. This report describes the requirements, components, and characteristics of DAMES, the recommended first steps in obtaining this capability, and the manner in which the first step can evolve into the desired ultimate system. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 842 706 11/6 20/11  
 BATTELLE MEMORIAL INST COLUMBUS OHIO DEFENSE METALS  
 INFORMATION CENTER

Current Problems in Prevention of  
 Fatigue. (U)

JUN 68 27P Grover, M. J. ; Mittenberge,

A. A. ;

REPT. NO. DMIC-S-25

CONTRACT: F33615-68-C-1325

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*METALS, FATIGUE(MECHANICS)), STATE-OF-THE-ART REVIEWS, TEST METHODS, CRACKS, PROPAGATION, MATERIALS, PROCESSING, FAILURE(MECHANICS), NONDESTRUCTIVE TESTING, DAMAGE, DETECTORS (U)

The Defense Metals Information Center conducted a brief survey of the present state of knowledge about fatigue with wide coverage to applications and with particular emphasis on means of early detection of fatigue damage. The survey has excluded consideration of reports of proprietary interest and of reports with security classification. However, it has included information from various branches of the U.S. Army, the U.S. Navy, the U.S. Air Force, and the National Aeronautics and Space Administration. The results of such considerations as have been possible are described in the following pages with the objectives of: (1) Delineating the current state of knowledge; (2) Indicating some of the current research toward increasing this knowledge; and (3) Pointing out areas where further work seems desirable. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 839 524 13/1 20/3

AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB  
OHIOTHERMOELECTRIC AIR CONDITIONER PERFORMANCE  
INVESTIGATION. (U)JUN 68 63P Herald, Richard H. :  
REPT. NO. AFAPL-TR-68-39  
PROJ: AF-8174  
TASK: 817411

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIR CONDITIONING EQUIPMENT,  
THERMOELECTRICITY), STATE-OF-THE-ART REVIEWS,  
PERFORMANCE(ENGINEERING), MILITARY REQUIREMENTS, HEAT  
EXCHANGERS, CIRCUITS, BLOWERS, POWER SUPPLIES, CONTROL  
SYSTEMS (U)  
IDENTIFIERS: BISMUTH TELLURIDE, EVALUATION (U)

An experimental program directed towards  
establishing a firmer level of performance for state-  
of-the-art thermoelectric air conditioners is  
described. Experimental data showing typical  
performance characteristics of a 1800 BTU per hour  
thermoelectric air conditioner under varying  
environmental and system operating conditions is  
presented. On the basis of the experimental  
results and observations made during this  
investigation, it is concluded that a thermoelectric  
air conditioner unit can be a practical and  
advantageous means of meeting military air  
conditioning requirements under certain environmental  
and system operating conditions. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 832 042 1/3 20/11

LOCKHEED-GEORGIA CO MARIETTA MATERIALS SCIENCES LAB

THE APPLICABILITY OF A FRACTURE MECHANICS-  
NONDESTRUCTIVE TESTING DESIGN CRITERION. (U)DESCRIPTIVE NOTE: Technical rept. 1 Jan-31 Dec 67,  
MAY 68 286P Packman, Paul F.; Pearson,  
Hugh S.; Owens, John S.; Marchese, Gloria B.REPT. NO. LGR-ER-9106-4  
CONTRACT: F33615-67-C-1180  
PROJ: AF-7381  
TASK: 738102  
MONITOR: AFML TR-68-32

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRFRAMES, \*NONDESTRUCTIVE TESTING),  
(\*FRACTURE(MECHANICS), PREDICTIONS), COMPUTER PROGRAMS,  
CRACK PROPAGATION, ENDURANCE(PHYSIOLOGY), STATE-OF-THE-  
ART REVIEWS, CRACKS, DETECTION, LOADS(FORCES), X RAYS,  
PENETRATION, ULTRASONIC PROPERTIES, TEST METHODS,  
ACCURACY, DESIGN (U)  
IDENTIFIERS: GRAPHS(CHARTS) (U)

This report describes the work conducted on a  
program designed to investigate the potential  
applicability of a combined fracture mechanics-  
nondestructive inspection procedure as a design  
approach for aircraft structures. The program  
consisted of three phases, conducted simultaneously:  
(1) a literature survey to determine if sufficient  
fracture toughness information exists to determine a  
statistically valid value of K<sub>Ic</sub>; (2) a test  
program to determine the minimum size of a crack that  
can be detected by each of four NDI methods:  
X-ray, magnetic-particle, penetrant, and  
ultrasonics; and (3) a test program to determine  
if fracture mechanics, when combined with flaw size  
as determined by NDI, can accurately predict the  
failure load of selected structures. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 829 418 8/5 20/6

ARMY ENGINEER TOPOGRAPHIC LABS FORT BELVOIR VA

FEASIBILITY STUDY FOR AN ALL-WEATHER SURVEYING SIGNAL  
LIGHT. (U)

FEB 68 58P Hawker, Mahlon C. ;

REPT. NO. USAETL-37-RR

PROJ: DA-1M6-23501-A-576

TASK: 1M6-23501-A-576-05

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*SURVEYING(GEOGRAPHIC), SIGNAL LIGHTS),  
(\*SIGNAL LIGHTS, STATE-OF-THE-ART REVIEWS), VISUAL  
SIGNALS, THEODOLITES, EYE, INTENSITY, RANGE(DISTANCE),  
WEATHER, LIGHT TRANSMISSION, COSTS, WEIGHT, RELIABILITY,  
LOGISTICS, INCANDESCENT LAMPS, XENON LAMPS, MERCURY  
LAMPS, LASERS, GENERATORS, FUEL CELLS, BATTERY  
COMPONENTS, ELECTRIC BATTERIES (U)

An investigation of the state-of-the-art in  
lightweight light sources and power sources and the  
general characteristics of atmospheric light  
transmission applicable to an improved all-weather  
surveying signal light. The report concludes that  
a more powerful light with a theoretical range  
increase of 50% is feasible but would require  
large, heavy, and expensive power supplies. The  
cost of the improved light system would be many times  
that of the present light and would most likely  
require more than one man to carry the complete  
system. The utility and overall efficiency of the  
present light source is considered to be very high by  
comparison. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 828 005 21/8.1

TRW SYSTEMS REDONDO BEACH CALIF POWER SYSTEMS DIV

SMALL DROPLET MEASURING TECHNIQUE. (U)

DESCRIPTIVE NOTE: Interim rept. on Phase 1, 1 May-30  
Aug 67.

FEB 68 82P

Ralph F. ; Harje, David T. ;

REPT. NO. 4768-67-006

CONTRACT: F04611-67-C-0105

MONITOR: AFRPL TR-67-295

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*LIQUID PROPELLANT ROCKET ENGINES, \*FUEL  
INJECTION), INJECTORS, SPARK SHADOWGRAPH PHOTOGRAPHY,  
DROPS, DETECTION, ANALYSIS, LASERS, INTERFERENCE, COLD  
FLOW, FLUORESCENCE, SIMULATION, SPRAYS, BIBLIOGRAPHIES,  
STATE-OF-THE-ART REVIEWS, FLOW VISUALIZATION (U)  
IDENTIFIERS: HOLOGRAPHY (U)

A study and experimental program is being conducted  
which involves the detection and analysis of size  
distributions of droplets associated with the  
injection process in liquid propellant rocket  
engines. Program objectives are to: (1)  
Determine, through a review of the literature,  
applicable methods of detecting and recording rocket  
injector droplet spray distributions; (2)  
Demonstrate feasibility of experimental techniques  
selected from the literature using cold flow  
propellant simulants; and, (3) Improve the  
methods of data reduction such that large quantities  
of droplet data may be reduced economically. (U)  
(Author)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 827 985 19/4 8/7 20/11 18/3  
 NEW MEXICO UNIV ALBUQUERQUE ERIC H WANG CIVIL ENGINEERING  
 RESEARCH FACILITY

DYNAMIC ROCK INSTRUMENTATION SURVEY. (U)

DESCRIPTIVE NOTE: Rept. for May-Aug 67,  
 FEB 68 47P Simmons, Kenneth B.;  
 CONTRACT: F29601-68-C-0009, AF 29(601)-6002  
 PROJ: AF-5710  
 MONITOR: AFWL TR-68-3

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*NUCLEAR EXPLOSIONS, ROCK), (\*ROCK,  
 STRESSES), SHOCK WAVES, MEASUREMENT, MOTION,  
 STRAIN(MECHANICS), UNDERGROUND EXPLOSIONS, SIMULATION,  
 STRAIN GAGES, MODULUS OF ELASTICITY, MODEL TESTS, STATE-  
 OF-THE-ART REVIEWS, INSTRUMENTATION, TEST METHODS, (U)  
 TERRAIN, PRESSURE, DETECTORS, TRANSDUCERS (U)  
 IDENTIFIERS: \*HIGH EXPLOSIVES SIMULATION TECHNIQUES, (U)  
 HOLES(OPENINGS) (U)

The problem of measuring stress, strain, and motion in a dynamically loaded rock environment is considered. A survey of the literature is made and extensions of previous work proposed. Methods are proposed for building new gages, fabricating rock samples, evaluating field gages in the laboratory, and placing the gages in the field. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 826 193 15/7 17/2.1 17/9 17/4  
 9/2 17/7 9/3  
 FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

ELECTRONICS IN MILITARY SCIENCE. (U)

SEP 67 350P  
 REPT. NO. FTD-HT-66-477 Jecmen, Jiri;

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of mono. Elektronika ve  
 Vojenstvi, Prague, 1964 298p.

DESCRIPTORS: (\*ELECTRONIC WARFARE, CZECHOSLOVAKIA),  
 (\*ELECTRONICS, MILITARY REQUIREMENTS), GUIDED MISSILE  
 COUNTERMEASURES, COMMUNICATION SYSTEMS, COMMUNICATION  
 EQUIPMENT, RADAR, RADAR EQUIPMENT, ELECTRONIC  
 COUNTERMEASURES, RADIO NAVIGATION, RADIO EQUIPMENT,  
 COMPUTERS, GUIDANCE, GUIDED MISSILES, ELECTRONIC  
 EQUIPMENT, POWER EQUIPMENT, STATE-OF-THE-ART REVIEWS (U)  
 IDENTIFIERS: TRANSLATIONS (U)

The aim of the book is to focus attention on the impact of electronics on military science, tactics and equipment, and to combine the accumulated information into one volume presenting the present state of the art of electronically supported warfare. The aim is to offer a sufficiently broad knowledge of problems in military electronics to serve as preparation for deeper study of special interest. Nine chapters compose the volume, headings are as follows: Communications techniques; Radar technique; Measures for jamming and locating radars; Radio navigation devices; Electronic computers; Missile guidance systems; Special-purpose electronic devices; Design and technology of the electronic devices; Power-source elements in electronic devices; Counter measures as well as capabilities are discussed under each appropriate topic. (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 821 988 9/5 14/4  
MARTIN CO ORLANDO FLADORMANT OPERATING AND STORAGE EFFECTS ON ELECTRONIC  
EQUIPMENT AND PART RELIABILITY. (U)

DESCRIPTIVE NOTE: Final rept. May 65-Mar 67.

JUL 67 172P Cottrell, D. F.; Gagnier, T.

R.; Kimball, E. W.;

REPT. NO. OR-8846

CONTRACT: AF 30(602)-3772

PROJ: AF-5519

TASK: 551902

MONITOR: IDEP 347.20.00.00-F9-01

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*ELECTRONIC EQUIPMENT,  
\*RELIABILITY(ELECTRONICS)), (\*FAILURE(ELECTRONICS),  
STORAGE), LIFE EXPECTANCY, DATA, STANDARDS, GRAPHICS,  
STATISTICAL ANALYSIS, DESIGN, ENVIRONMENT, MATHEMATICAL  
MODELS, STRESSES, STATE-OF-THE-ART REVIEWS, CIRCUITS,  
MICROELECTRONICS (U)

A 22 month program has been conducted to determine the effects of dormant operating and storage conditions on electronic equipment and parts. An extensive data search has been made covering major aerospace industries, research institutes, and government agencies. Over 760 billion part-hours of dormant operating and storage information on various part classes have been collected from all sources. Of these data, approximately 76 billion part-hours are on military standard parts, 52 billion on selected military standard parts, 630 billion on high reliability parts, and 3 billion on microcircuits. These data have been processed and are presented in the form of storage or dormant operating failure rates by part type and subtypes for the various part classes. Failure rate charts have been constructed and partially validated for military standard and for high reliability part classes. Environmental effects of dormant operation and storage on the various part classes are discussed together with some factors relating them to each other whether in the dormant operating or storage mode. Test data from storage programs have been statistically analyzed to determine performance drift trends with nonoperating time. (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 819 521 20/4  
MASSACHUSETTS INST OF TECH CAMBRIDGE HYDRODYNAMICS  
LABCAVITATION NEAR SURFACES OF DISTRIBUTED  
ROUGHNESS. (U)

DESCRIPTIVE NOTE: Technical rept.,

JUN 67 150P Arndt, Roger E. A.; Ippen,

Arthur T.;

REPT. NO. 104, R67-17

CONTRACT: DA-31-124-ARO(D)-189, DA-31-124-ARO(D)-  
410

PROJ: DA-20014501B33G, AROD-6024-E

MONITOR: AROD 6024:1-E

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*TURBULENT BOUNDARY LAYER, \*CAVITATION),  
(\*SURFACE ROUGHNESS, CAVITATION), DIFFUSION,  
PROPAGATION, TURBULENCE, DISTRIBUTION, STABILITY,  
GROWTH(PHYSIOLOGY), INTERFACIAL TENSION, FRICTION,  
INTENSITY, SHEAR STRESSES, STATE-OF-THE-ART REVIEWS,  
THEORY, TEST FACILITIES, TEST METHODS, INSTRUMENTATION,  
WATER, FLOW FIELDS, REYNOLDS NUMBER (U)  
IDENTIFIERS: SKIN(STRUCTURAL MEMBER), SURFACE  
FRICTION (U)

This investigation consists of an experimental study of cavitation inception and the associated bubble dynamics in turbulent boundary layers adjacent to surfaces roughened with two-dimensional triangular grooves. The project was initiated due to the apparent lack of published information on the effects of distributed roughness on cavitation inception as opposed to the effects of isolated irregularities. The experimental program covers the measurement of mean velocity profiles, turbulence intensity and the determination of the cavitation inception index for turbulent flow adjacent to both smooth and rough boundaries. In all cases the test liquid was water at room temperature. Four triangular roughness patterns were tested, consisting of roughness heights of 0.100, 0.050, 0.025, and 0.0125 inches, respectively. The maximum velocity was varied between the limits 16 to 51 feet per second. For the same conditions, cavitation flow was observed by high speed motion pictures. Data concerning bubble distribution, stability, (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 818 940 14/2 9/5  
GOODYEAR AEROSPACE CORP AKRON OHIOSIMULATION IMAGE GENERATION. VOLUME II. STUDY OF  
TRANSPARENCY AND STYLIZED IMAGE TECHNIQUES; VIRTUAL  
IMAGE DISPLAY. (U)DESCRIPTIVE NOTE: Final rept. 15 Sep 65-15 Jul 66,  
APR 67 91P Stoner, L. D.; Keates, D.

T. I.

REPT. NO. GER-12755

CONTRACT: AF 33(615)-2394

PROJ: AF-6114

TASK: 611405

MONITOR: AMRL TR-66-18-Vol-2

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-485  
304L.

DESCRIPTORS: (\*FLIGHT SIMULATORS, \*TELEVISION DISPLAY  
SYSTEMS), STATE-OF-THE-ART REVIEWS, OPTICAL IMAGES,  
ELECTRONIC SCANNERS, TERRAIN, TELEVISION CAMERAS, CAMERA  
LENSES, CATHODE RAY TUBE SCREENS, PHOTOGRAPHY, OPTICAL  
SCANNING, DATA STORAGE SYSTEMS, IMAGE CONVERTERS,  
RESOLUTION, ELECTROOPTICS, ELECTRONIC EQUIPMENT, CLOSED  
CIRCUIT TELEVISION, FOCUSING, LOW ALTITUDE  
IDENTIFIERS: FLYING SPOT SCANNERS (U)

Phase II investigates depth of field, resolution,  
perspective, and shading as related to flying spot  
scanner (FSS) and stylized visual image generation.  
The study extended the definitions of FSS systems  
to include scanning pickups, with suitable light  
sources, conventional pictorial transparencies, and  
the coupling optics subsystem with analysis of  
problem areas and recommendations for improving the  
state of the art. An analysis was made of typical  
stylized image generation requirements from a viewer  
and equipment standpoint. This analysis leads to  
recommendations for improved languages and mechanics  
and for optimization of the system with respect to  
viewers characteristics. Reviewed in this study  
are equipment concepts and hardware and especially  
the need for video-data storage devices capable of  
operating in real time with ordinary and high-  
resolution TV equipment. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 818 906 21/5  
NORTH CAROLINA STATE UNIV RALEIGH

TURBINE ENGINE CHECKOUT. (U)

DESCRIPTIVE NOTE: Final rept. 25 Aug 66-15 May 67,  
AUG 67 39P Barrett, Rolin F.; Hart,  
Franklin D.; Smetana, Frederick O.; Hartsell,  
H. Craig;

CONTRACT: AF 33(615)-5413

PROJ: AF-8119

TASK: 811925

MONITOR: AFAPL TR-67-88

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*GAS TURBINES, \*CHECKOUT EQUIPMENT),  
CHECKOUT PROCEDURES, MAINTAINABILITY, EFFECTIVENESS,  
OPERATION, COMBUSTION CHAMBERS, FLIGHT TESTING,  
AIRBORNE, AUTOMATIC, AUDITORY SIGNALS, COST  
EFFECTIVENESS, EXHAUST FAIRINGS, OIL FILTERS,  
SPECTROMETERS, MONITORS, DESIGN, TURBINE PARTS,  
COMPRESSOR PARTS, FAILURE(MECHANICS), DETECTION,  
THERMODYNAMICS, LUBRICATION, INSTRUMENTATION, BEARINGS,  
STATE-OF-THE-ART REVIEWS, VIBRATION, DIAGNOSTIC AGENTS,  
X RAYS, ACOUSTIC SIGNALS (U)

Various procedures currently employed for the  
assessment of aircraft turbine engine conditions are  
studied and analyzed. A new analyzer concept and  
the developments necessary for implementation are  
discussed. The major conclusions and methods  
discussed are that in order for turbine engines to be  
maintainable: (1) Engine design should  
include comprehensive means for analysis and easy  
access to the engine interior; (2) Economic  
efficiency demands engine operation to the point  
where maintenance service is required to prevent  
failure and performing only those services which are  
required; (3) No single concept or system  
currently being used is sufficient for complete  
engine diagnosis, but the correct incorporation of  
certain techniques and features of such systems may  
be used in concert to fulfill this need. Such a  
concept has been envisioned and discussed.  
(Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 816 434 9/3  
CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB  
JOINT SERVICES ELECTRONICS PROGRAM.

DESCRIPTIVE NOTE: Final rept. 16 Feb 66-15 Feb 67,  
FEB 67 68P Angelakos, D. J.; Whinnery,  
J. R.;  
REPT. NO. ERL-67-5  
CONTRACT: AF-AFDSR-139-66  
PROJ: AF-4751

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ELECTRONICS, \*BIBLIOGRAPHIES), STATE-OF-  
THE-ART REVIEWS, PLASMAS(PHYSICS), QUANTUM THEORY, WAVE  
PROPAGATION, PROPAGATION, ELECTRON MICROSCOPY, SOLID  
STATE PHYSICS, SYSTEMS ENGINEERING, COMPUTERS,  
SEMICONDUCTORS, BIONICS, BIOPHYSICS (U)

Contents: Bioelectronics; Plasmas; Quantum  
and Optical Electronics; Radiation and  
Propagation; Scanning Electron Microscopy;  
Semiconductor Electronics; Systems and  
Computer Sciences.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 816 533 9/2  
OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)  
THE BRITISH COMPUTER SCENE, PART IV, THE  
UNIVERSITIES.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
JUN 67 55P Cowie, James; Hemann, John  
W.; Maycock, Paul D.;  
REPT. NO. ONRL-33-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Part 3, AD-814 890.

DESCRIPTORS: (\*COMPUTERS, GREAT BRITAIN), UNIVERSITIES,  
UNITED STATES, COMPUTER PROGRAMS, INFORMATION RETRIEVAL,  
PROGRAMMING LANGUAGES, DATA PROCESSING, DATA STORAGE  
SYSTEMS, STATE-OF-THE-ART REVIEWS (U)  
IDENTIFIERS: FORTRAN, MULTIPLE ACCESS SYSTEM (U)

A survey of the British computer scene was  
undertaken in late 1966 and early 1967. The  
authors acknowledge the encouragement of the  
Information Systems Branch, ONR. The  
purpose of the survey was to review the state of  
development of the British computer scene and to  
identify future trends. This report is fourth in a  
series. It describes the university efforts in  
computing science. Computer development, language  
development, computer tuition, and computer usage are  
covered. The first report in this series is the  
Government Impact on the Computer Scene  
(ONRL-21-67); the second is 'The British  
Computer Industry' (ONRL-27-67); the third  
is 'The Regional and National Computer  
Centres' (ONRL-28-67). Other reports  
(Parts V and VI) will cover the management  
schools; computer interests and a summary of the  
series. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 815 891 5/3  
BOEING CO SEATTLE WASH MISSILE AND INFORMATION SYSTEMS  
DI

SURVEY OF MANUFACTURERS OF FILM CIRCUITRY INITIAL  
REPORT. (U)

DESCRIPTIVE NOTE: Technical rept.,  
APR 67 312P Hughes, Victor C. ;  
CONTRACT: N00163-67-C-0040  
MONITOR: NAFI TR-1031

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FILMS, \*INDUSTRIAL PRODUCTION),  
(\*ELECTRICAL INDUSTRY, DIRECTORIES). (\*CIRCUITS, STATE-  
OF-THE-ART REVIEWS), ELECTRONICS LABORATORIES (U)  
IDENTIFIERS: \*THICK FILM CIRCUITS, \*THICK FILMS, THIN  
FILM ELECTRONICS, \*THIN FILMS (U)

This document reports the findings of an extensive  
mail and personal-visit survey of organizations that  
are now producing prototype or production quantities  
of thin and thick film circuitry or that wish to  
produce it in the immediate future. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 813 462 20/14  
ADVANCED TECHNOLOGY CORP TIMONIUM MD

IMPLICATIONS OF MILLIMETER WAVE RESEARCH AND  
TECHNOLOGY ON NAVAL PROBLEMS. (U)

DESCRIPTIVE NOTE: Semiannual rept.,  
JAN 67 195P Conn, Marvin ; Littlepage,  
Robert S. ;  
CONTRACT: N00014-66-C-0166

UNCLASSIFIED REPORT

DESCRIPTORS: (\*MILLIMETER WAVES, STATE-OF-THE-ART  
REVIEWS), RADIO RECEIVERS, ELECTRON TUBES, PROPAGATION,  
ANTENNAS, POWER EQUIPMENT, ANTENNA ARRAYS, PHASE SHIFT  
CIRCUITS, ELECTRIC FILTERS, COMMUNICATION AND RADIO  
SYSTEMS, RADAR, ATMOSPHERICS, CIRCUITS, SEMICONDUCTOR  
DEVICES, ATMOSPHERES, ATTENUATION, SCATTERING,  
METEOROLOGICAL PHENOMENA, ATMOSPHERE MODELS, PHASED  
ARRAYS, WAVEGUIDE CIRCULATORS, ELECTRONIC SWITCHES,  
RADAR RECEIVERS (U)

This technical report contains a survey and  
critical analysis of the existing and projected  
millimeter wavelength state-of-the-art. Specific  
areas treated include: propagation effects,  
antennas, components, power sources, and receiver  
techniques. Areas where further research and  
development would result in increased performance  
have been pointed out. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 811 679 20/4 14/2

CORNELL AERONAUTICAL LAB INC BUFFALO N Y

STUDY OF HIGH-DENSITY HYPERVELOCITY FLOWS AND  
SIMILITUDES.

(U)

DESCRIPTIVE NOTE: Interim technical rept. May 65-May  
66.

APR 67 288P Wittliff, C. E. ; Sundaram,

T. R. ; Rao, W. T. ; Lordi, J. A. ;

REPT. NO. CAL-AF-2081-A-1

CONTRACT: AF 40(600)-1131

PROJ: AF-8950

MONITOR: AEDC TR-67-72

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HYPERSONIC FLOW, TEST METHODS), (\*REENTRY  
VEHICLES, HYPERSONIC CHARACTERISTICS), HYPERSONIC WIND  
TUNNELS, WIND TUNNEL MODELS, MODELS(SIMULATIONS), MODEL  
TESTS, SCALE, RELIABILITY, NOZZLE GAS FLOW, VISCOSITY,  
TURBULENCE, LAMINAR BOUNDARY LAYER, TURBULENT BOUNDARY  
LAYER, BLUNT BODIES, SLENDER BODIES, SHOCK WAVES,  
WEDGES, FLAT PLATE MODELS, CYLINDRICAL BODIES, CONICAL  
BODIES, ABLATION, CHEMICAL REACTIONS, STAGNATION POINT,  
MAGNETOHYDRODYNAMICS, NONEQUILIBRIUM FLOW, FROZEN  
EQUILIBRIUM FLOW, HIGH ALTITUDE, STATE-OF-THE-ART  
REVIEWS

(U)

This report presents the results of a study of  
hypervelocity flows, with particular emphasis on the  
similitude requirements. A primary objective has  
been to delineate the similitude parameters for  
certain typical flows and, where possible, to  
evaluate the effects of not duplicating all of the  
similitude parameters in wind-tunnel tests. As a  
part of this study, a comprehensive review of  
inviscid and viscous similitude is given, as well as  
a state-of-the-art survey of flow solutions. It is  
shown that in many instances there do not exist, at  
present, sufficient experimental data or theoretical  
solutions to evaluate the sensitivity of various flow  
quantities to variations in the similitude parameters  
nor to determine whether some similitude parameters  
are less important than others. Such an evaluation  
has been accomplished for certain simple flows, such  
as wedges, cones, blunt-nosed flat plates and  
stagnation-region flows.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 807 400 9/2 22/2

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

SPACEBORNE SOFTWARE SYSTEMS STUDY. VOLUME IV:  
SURVEY OF SOFTWARE TECHNIQUES.

(U)

DESCRIPTIVE NOTE: Final rept. Sep 65-Dec 66,

JAN 67 330P

Carey, Levi J. ; Tucker, Alfred E. ;figer,

Henry J. ; Shaw, Christopher J. ;

CONTRACT: AF 19(628)-5166

MONITOR: SSD TR-67-11-Vol-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, AD-807 399L,

DESCRIPTORS: (\*DIGITAL COMPUTERS, SPACEBORNE),  
(\*PROGRAMMING LANGUAGES, SPACEBORNE), DATA STORAGE  
SYSTEMS, DATA PROCESSING, MANAGEMENT PLANNING AND  
CONTROL, LEAD TIME, STATE-OF-THE-ART REVIEWS, DESIGN,  
DECISION MAKING, VALUE ENGINEERING, SYSTEMS ENGINEERING,  
COMPUTER PROGRAMS, GUIDED MISSILE COMPUTERS, COMPUTERS,  
NAVIGATION COMPUTERS, GROUND SUPPORT EQUIPMENT  
IDENTIFIERS: SPL(SPACE PROGRAMMING LANGUAGE)

(U)

(U)

This volume presents a collection of techniques  
applicable to general software development and in  
particular to spaceborne computer software. These  
techniques were selected for their utility in  
reducing development time and costs and increasing  
reliability and accuracy. After reviewing the  
information processing requirements of future space  
missions, a state-of-the-art survey was made of  
applicable software practices. References are  
included to indicate how to find techniques  
applicable to various mission elements. These  
techniques are grouped according to information  
processing functions performed by spaceborne and  
ground computers. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 807 399 9/2 22/2

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

SPACEBORNE SOFTWARE SYSTEMS STUDY. VOLUME III: RECOMMENDATION FOR A COMMON SPACE PROGRAMMING LANGUAGE. (U)

DESCRIPTIVE NOTE: Final rept. Sep 65-Dec 66,

JAN 67 151P Hirschfield, Gerard A. ;

Carey, Levi J. ; Tucker, Alfred E. ; Ilger,

Henry J. ; Shaw, Christopher J. ;

CONTRACT: AF 19(628)-5166

MONITOR: SSD TR-67-11-Vol-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 4, AD-807 400

DESCRIPTORS: (\*DIGITAL COMPUTERS, SPACEBORNE), (\*PROGRAMMING LANGUAGES, SPACEBORNE), DESIGN, STATE-OF-THE-ART REVIEWS, COMPUTER PROGRAMS, MANAGEMENT PLANNING AND CONTROL, SPECIFICATIONS, SCHEDULING, DATA STORAGE SYSTEMS, DATA PROCESSING, PERFORMANCE(HUMAN), MANPOWER, GUIDED MISSILE COMPUTERS, COMPUTERS, NAVIGATION COMPUTERS (U)

IDENTIFIERS: JOVIAL, SPL(SPACE PROGRAMMING LANGUAGE) (U)

This volume of the Spaceborne Software Systems Study recommends a programming language for adoption as the common higher-order programming language for spaceborne software. The volume describes the benefits to be obtained from adopting a higher-order language and describes the reasons why the present time is appropriate for adoption of such a language. The spaceborne software application area is analyzed and reviewed including: programming personnel, hardware, production methods, and data processing functions. An evaluation of existing widely accepted languages is made and a description of the semantic capabilities of the recommended language and its subsets is included. A description of implementation considerations is also provided; this includes compiler capability requirements and a recommendation regarding compiler development techniques. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 807 398 9/2 22/2

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

SPACEBORNE SOFTWARE SYSTEMS STUDY. VOLUME II: SURVEY, ANALYSIS AND RECOMMENDATIONS. (U)

DESCRIPTIVE NOTE: Final rept. Sept 65-Dec 66,

JAN 67 225P Hirschfield, Gerard A. ;

Carey, Levi J. ; Tucker, Alfred A. ; Shaw,

Christopher J. ; Ilger, Henry J. ;

CONTRACT: AF 19(628)-5166

MONITOR: SSD TR-67-11-Vol-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, AD-807 399L.

DESCRIPTORS: (\*DIGITAL COMPUTERS, SPACEBORNE), (\*PROGRAMMING LANGUAGES, SPACEBORNE), DESIGN, STATE-OF-THE-ART REVIEWS, PROBLEM SOLVING, COMPUTER PROGRAMS, PROGRAMMING LANGUAGES, PERFORMANCE(HUMAN), MANPOWER, VALUE ENGINEERING, SPECIFICATIONS, LEAD TIME, MANAGEMENT PLANNING AND CONTROL, MANAGEMENT PLANNING AND CONTROL, GUIDED MISSILE COMPUTERS, NAVIGATION COMPUTERS, COMPUTERS (U)

IDENTIFIERS: SPL(SPACE PROGRAMMING LANGUAGE) (U)

This volume of the Spaceborne Software Systems Study final report presents the data and information collected from a state-of-the-art survey of spaceborne software systems. The data and information presented are analyzed in respect to current and future problem areas and conclusions are established in regard to both the technical and managerial aspects of spaceborne software development. Based upon the conclusions, recommendations are presented as guidelines for an advanced spaceborne software development program. (Author) (U)



## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 804 956 9/1 9/5  
EIMAC SAN CARLOS CALIF

STUDY AND INVESTIGATION LEADING TO THE DESIGN OF  
BROADBAND HIGH POWER KLYSTRON AMPLIFIERS.

(U)

DESCRIPTIVE NOTE: Rept. no. 4(Final), 1 Mar-31 Aug  
66,

NOV 66 88P Lien, Erling ; Robinson,

Darrell ;

CONTRACT: DA-28-043-AMC-01362(E)

PROJ: DA-5624-11-905-04-78

MONITOR: ECM 01362-F

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*KLYSTRONS, \*MICROWAVE AMPLIFIERS), POWER  
AMPLIFIERS, BROADBAND, DESIGN, STATE-OF-THE-ART REVIEWS,  
RESONATORS, IMPEDANCE MATCHING, RADIO SIGNALS, C BAND,  
GAIN, COMPUTERS, CAVITY RESONATORS, ANALYSIS, THEORY (U)  
IDENTIFIERS: INTERACTION CIRCUITS (U)

The objective of this program has been to investigate rf interaction circuits and stagger-tuning techniques leading to at least a fifty percent improvement in the 1 db bandwidth of high-power klystrons over the current state-of-the-art. In this report, the findings of the final phase of this contract are presented. The major part of the effort during this final reporting period included: the completion of large-signal efficiency calculations across the band assuming a filter-loaded output resonator, the final theoretical design of the buncher section, theoretical stability calculations on the filter-loaded output resonator, and cold test measurements on a filter-loaded extended-interaction resonator. The measured interaction impedance obtained with the cold-test filter-loaded output resonator closely approximated the impedance assumed in the theoretical efficiency calculations. The final buncher section, designed with the aid of the small-signal computer program, yielded a nearly constant rf drive current to the output resonator, as was assumed in the large-signal efficiency calculations. The small-signal analysis indicated that conventional single-gap resonators are to be preferred over extended-interaction resonators in the klystron buncher section at the high power level considered in this study. (Author)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 804 840 14/5 9/2  
XEROX CORP ROCHESTER N Y

SELECTIVE PHOTOCOPIER.

(U)

DESCRIPTIVE NOTE: Final rept. Jan 65-Feb 66,

JUN 66 214P Sokolov, D. A. ;

CONTRACT: AF 30(602)-3413

PROJ: AF-5591

MONITOR: RADC TR-66-222

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*DATA PROCESSING, \*PHOTOGRAPHIC RECORDING  
SYSTEMS), PHOTOGRAPHIC DATA LINKS, DATA TRANSMISSION  
SYSTEMS, PHOTOGRAPHY, STATE-OF-THE-ART REVIEWS,  
DOCUMENTS, MASKING, HUMAN FACTORS ENGINEERING, OPTICAL  
EQUIPMENT, OPTICAL EQUIPMENT COMPONENTS,  
PERFORMANCE(ENGINEERING), BIBLIOGRAPHIES, MICROFILM,  
INPUT OUTPUT DEVICES, COMPUTERS (U)  
IDENTIFIERS: PHOTOCOPIING (U)

The purpose of this effort was to determine the feasibility of developing a Selective Photocopier through a study and investigation of various aspects of document preparation and handling and by the construction of a breadboard model. The Photocopier is a preprocessing device which will separately record text and graphic information from hard copy intelligence containing both. This preprocessing function will provide hard copy intelligence in a form suitable for automatic machine coding and recomposition. The final report covers the study areas and various state-of-the-art techniques which lead to the design of the breadboard model of the Selective Photocopier. The construction and operational functions of the breadboard as well as recommendations for further development are included in the report. (Author)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 802 998 14/4 9/3  
ARINC RESEARCH CORP ANNAPOLIS MDAVIONICS RELIABILITY AND MAINTAINABILITY PREDICTION  
BY FUNCTION. (U)

DESCRIPTIVE NOTE: Final rept. Apr 64-Aug 66,  
OCT 66 186P Balaban, H. S. ; Harrison, G.  
T. ; Plotkin, R. M. ; Retterer, B. L. ;  
REPT. NO. 317-02-2-647  
CONTRACT: AF 30(602)-3387  
PROJ: AF-5519  
TASK: 551902  
MONITOR: RADC TR-66-509

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ELECTRONIC EQUIPMENT,  
RELIABILITY(ELECTRONICS)). (\*RELIABILITY(ELECTRONICS),  
\*MATHEMATICAL PREDICTION). (\*MAINTAINABILITY,  
MATHEMATICAL PREDICTION). AIRBORNE,  
FAILURE(ELECTRONICS), SYSTEMS ENGINEERING, NUMERICAL  
METHODS AND PROCEDURES, STATE-OF-THE-ART REVIEWS,  
FEASIBILITY STUDIES (U)

The report represents the results of a broad investigation that seeks to advance the state-of-the-art of the data analysis techniques used to predict system reliability and maintainability. Principally, this study was directed toward development of a reliability prediction-by-function technique for avionics equipment and units. As a result of the large scale data collection and analysis program carried out during this study, a series of equations have been formulated which permits the prediction of mean-time-between-failures through a knowledge of selected performance parameters; these parameters represent quantities that are generally known early in the design cycle, enabling reliability predictions by function to be made long before parts population and stress data, the basis of existing prediction techniques, become available. Also, as a result of this study, the development of maintainability prediction-by-function techniques for avionics equipment was determined to be feasible. Predictions in terms of shop-mean-time-to-repair, based on general design characteristics, were shown to be achievable. The feasibility of drawing useful reliability design guidelines from engineering and data analysis also was established. (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 800 137 21/9.1 21/2  
DYNAMIC SCIENCE CORP MONROVIA CALIFEFFECTS OF ADDITIVES ON THE COMBUSTION OF  
HYDRAZINE. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 1, 2 May-2 Aug  
66, SEP 66 21P Breen, B. P. ; Lawver, B.  
R. ;  
REPT. NO. SN-86-3-1  
CONTRACT: AF 04(611)-11616  
MONITOR: AFRPL TR-66-254

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HYDRAZINE, COMBUSTION), (\*FUEL ADDITIVES,  
HYDRAZINE), HYPERGOLIC ROCKET PROPELLANTS, HYPERGOLIC  
IGNITION, IGNITION LAG, DROPS, FLAMES, AMMONIA, NITROGEN  
COMPOUNDS, DIOXIDES, HYDROGEN, SPECTROSCOPY,  
INSTRUMENTATION, STATE-OF-THE-ART REVIEWS (U)

This is the first quarterly report of a twelve month research program being conducted to study the effects of additives upon the combustion of single liquid hydrazine droplets. These effects will be related to rocket chamber combustion and to combustion instability. Phase-I of this study was completed and is described in this report. This involved literature survey for potential additives and combustion test equipment buildup. Preliminary photographic and concentration experiments are being performed in order to more logically choose the additives to be studied in the remaining portion of this program. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 787 550

13/7

HARRY DIAMOND LABS WASHINGTON D C

Proceedings of the Fluidic State-of-the-Art Symposium Held at Naval Ordnance Lab., White Oak, Md. on 30 September-3 October, 1974. Volume V.

(U)

74 518P

PROJ: HDL-302531

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 4, AD-787 549.

DESCRIPTORS: \*Fluidics, \*State of the art, \*Meetings, Fluorics, Fluoric devices, Fluid amplifiers, Fluidic control, Bistable devices, Vortices, Coanda effect

IDENTIFIERS: \*Proportional amplifiers, \*Flow attachment

(U)

(U)

Contents: Fluidics fabrication; fluidic products; fluidic industrial process applications; fluidic cooling controls; hydraulic control systems; fluidic fuel controls; fluidic ejection seat control; fluidic brake control; fluidic anti-skid systems; fluidic bag manufacturing control; fluidic military applications; fluidic oil-water separator; fluidic bistable actuator; fluidic missile control valve; and flow control circuits.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 787 549

13/7

HARRY DIAMOND LABS WASHINGTON D C

Proceedings of the Fluidic State-of-the-Art Symposium Held at Naval Ordnance Lab., White Oak, Md. on 30 September-3 October, 1974. Volume IV.

(U)

74 391P

PROJ: HDL-302531

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 5, AD-787 550.

DESCRIPTORS: \*Fluidics, \*State of the art, \*Meetings, Fluorics, Fluoric devices, Fluid amplifiers, Fluidic control, Bistable devices, Vortices, Coanda effect

IDENTIFIERS: \*Proportional amplifiers, \*Flow attachment

(U)

(U)

Contents: Computer aided fluidic circuit design; fluidic compensation networks; fluidic multiplier; fluidic impedance measurement; fluidic interconnections; pneumatic transmission lines; Sixth Cranfield Fluidics Conference; and fluidics stabilization on contamination effects on fluidic devices.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 787 548 13/7  
HARRY DIAMOND LABS WASHINGTON D C

Proceedings of the Fluidic State-of-the-Art Symposium Held at Naval Ordnance Lab., White Oak, Md. on 30 September-3 October, 1974. Volume III.

(U)

74 485P  
PROJ: HDL-302531

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 4, AD-787 549.

DESCRIPTORS: \*Fluidics, \*State of the art, \*Meetings, Fluidics, Fluoric devices, Fluid amplifiers, Fluidic control, Bistable devices, Vortices, Coanda effect  
IDENTIFIERS: \*Proportional amplifiers, \*Flow attachment

(U)

(U)

Contents: Digital fluidic components; digital fluidic systems; digital analog hybrid fluidic system; regenerative process fluidic switching circuits; fluid logic networks; fluidic threshold logic; state diagram synthesis of sequential feedback control circuits; signal analysis of fluidic networks; fluoric controller, fluidic carrier techniques; fluidic notch filters; analog fluidic circuits; and low power hydraulic control components.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 787 547 13/7  
HARRY DIAMOND LABS WASHINGTON D C

Proceedings of the Fluidic State-of-the-Art Symposium Held at Naval Ordnance Lab., White Oak, Md. on 30 September-3 October, 1974. Volume II.

(U)

74 642P  
PROJ: HDL-302531

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, AD-787 548.

DESCRIPTORS: \*Fluidics, \*State of the art, \*Meetings, Fluidics, Fluoric devices, Fluid amplifiers, Fluidic control, Bistable devices, Vortices, Coanda effect  
IDENTIFIERS: \*Proportional amplifiers, \*Flow attachment

(U)

(U)

Contents: Fluidics; fluidics; miniature fluid amplifier; bistable fluid amplifier; laminar flip-flop; moving part fluidic devices; fluidic pressure-flow interface; fluidic sensors; fluidic acoustic sensor; vortex rate sensor; laminar jet rate sensor; fluidic G sensor; pneumatic rate/acceleration sensor; fluidic non-contact gaging; rotational speed control; fluid amplifier scaling; heat and mass transfer in fluidic circuits; thrust of free and submerged jets; particles in fluidic devices; and supersonic boundary layer.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 787 546 13/7  
HARRY DIAMOND LABS WASHINGTON D C

Proceedings of the Fluidic State-of-the-Art  
Symposium Held at Naval Ordnance Lab.,  
White Oak, Md. on 30 September-3 October,  
1974. Volume I.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
74 605P  
PROJ: HDL-302531

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-787 547.

DESCRIPTORS: \*Fluidics, \*State of the art,  
\*Meetings, Fluidics, Fluidic devices, Fluid  
amplifiers, Fluidic control, Bistable devices,  
Vortices, Coanda effect  
IDENTIFIERS: \*Proportional amplifiers, \*Flow  
attachment

(U)

(U)

Contents: Fluidics; fluidics; vortex diode;  
vortex triode; turbulence amplifier; laminar  
proportional amplifier; wall-attachment fluid  
amplifiers; and bistable fluidic amplifiers.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 785 551 13/13 9/2  
ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN  
ILL

An Evaluation of Computer-Aided  
Architectural Systems.

(U)

DESCRIPTIVE NOTE: Interim rept.,  
AUG 74 37P Dains, R. B. ; Kelley, K.  
C. ;

REPT. NO. CERL-IR-D-31  
PROJ: DA-4-A-062103-A-891  
TASK: 4-A-062103-A-89106

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Computer applications, \*Architecture,  
State of the art, Allocations, Questionnaires  
IDENTIFIERS: \*Computer aided design, \*Structural  
design, Evaluation

(U)

(U)

This report outlines the state-of-the-art in  
computer-aided design, suggests a number of possible  
uses of computers to solve Corps design problems,  
and makes recommendations for the direction of future  
work. (Modified author abstract)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 784 944 1/3 14/2  
 ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
 PARIS (FRANCE)

AGARD Flight Test Instrumentation Series.  
 Volume 6. Open and Closed Loop  
 Accelerometers.

(U)

JUL 74 46P McLaren, I. ;  
 REPT. NO. AGARD-ograph-160-Vol-6

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 4, AD-771 192.  
 NATO furnished.

DESCRIPTORS: \*Aircraft, \*Flight testing,  
 \*Accelerometers, Instrumentation, Open loop  
 systems, Closed loop systems, Transducers,  
 Calibration, State of the art

(U)

The report provides a balanced up-to-date presentation of the state-of-the-art of both open and closed loop accelerometers used for aircraft flight test work, covering system and component analysis and basic hardware design. Both physical design problems and mathematical analysis are covered and special emphasis is put on those aspects likely to be relevant to aircraft flight test work. Performance details includes repeatability, compensation for temperature variation, insusceptibility to cross effects, stability under vibration and frequency response. The application of accelerometers in several flight test techniques together with their performance requirements are reviewed in order to guide the flight test engineer in making his choice of instrument in any particular case.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 781 651 21/5  
 NAVAL AIR PROPULSION TEST CENTER TRENTON N J PROPULSION  
 TECHNOLOGY AND PROJECT ENGINEERING DEPT

State-of-the-Art Review - Small Gas  
 Turbine Engine Technology.

(U)

DESCRIPTIVE NOTE: Final technical rept.,  
 JUN 74 199P Benham, Robert B. ;  
 REPT. NO. NAPTIC-PE-35  
 PROJ: A330-5360/218-B/2F004-32-30-8

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Gas turbines, \*State of the art,  
 Fabrication, Turbine parts, Scaling factors,  
 Performance(Engineering), Cost analysis, Fuel  
 consumption

(U)  
(U)

IDENTIFIERS: \*Small gas turbines

The report looks at the spectrum of Navy missions and determines the major applicable performance or cost parameters. The competitiveness in each parameter is examined for three types of small engines -- the reciprocating (both Otto and Diesel cycles), the rotary-combustion and the gas turbine. A discussion on the impact of military programs - ATEGG, STEP, STAGG, SCAD, HARPOON, ETE, and RPV - on the small turbine engine evolutionary cycle is provided. It is found that evolution will proceed along each of two separate lines (1) maximum performance and (2) minimum specific cost. It is determined that the gas turbine engine suffers from size effects which render the 5 lb/sec air-flow engine inferior in every parameter to the 30 lb/sec engine. The effects of scaling on the performance of the major components - compressor, turbine, combustor, bearings, seals, and controls, is examined. Techniques for cost reduction are considered. Programs for upgrading component performance and lowering fabrication costs are proposed.

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(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 781 138 8/5  
INFORMATICS INC ROCKVILLE MDSoviet Satellite Geodesy. Basis and Status  
of Soviet Laser Geodesy and Long-Base  
Line Interferometry.

(U)

DESCRIPTIVE NOTE: Interim rept.,

MAY 74 262P Hibben, Stuart G.; Rowell,

Eleanor M.;

CONTRACT: F4-620-72-C-0053

PROJ: ARPA Order-1622

MONITOR: AFCSR TR-74-0962

UNCLASSIFIED REPORT

DESCRIPTORS: \*Geodesy, \*USSR, State of the art,  
Geodetic satellites, Satellite tracking systems,  
Triangulation, Instrumentation, Cameras, Range  
finding, Laser, Radio interferometers, Frequency  
standards

(U)

IDENTIFIERS: Laser range finders, Long baseline  
radio interferometry

(U)

The report is a survey of Soviet developments in  
satellite geodesy, presented in the following  
sections: Survey of Soviet literature;  
observation and tracking stations; space  
triangulation networks; cameras used for satellite  
geodesy; laser geodesy; and long-baseline  
interferometry. Four appendices are included.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 781 114 9/5  
POLYTECHNIC INST OF NEW YORK BROOKLYNGeneration of Ultra-High Power Electrical  
Pulses.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Dec 72-30 Nov 73,

MAY 74 86P Birenbaum, L.; Levi, E.;

CONTRACT: F30602-73-C-0053

PROJ: AF-4506

TASK: 450603

MONITOR: RADC TR-74-119

UNCLASSIFIED REPORT

DESCRIPTORS: \*Pulse generators, \*Radiofrequency  
generators, High power, Video signals, Microwave  
equipment, Generators, Radiofrequency power,  
Reviews, State of the art, Energy conversion,  
Superconductivity, Plasmas (Physics)

(U)

The report is a comprehensive assessment of the  
state-of-the-art of various energy conversion  
techniques involving high power electrical pulse  
generation. The subjects treated include rotating  
machines, explosive devices, superconductivity,  
switching, and plasma techniques, including the  
supercritical temperature and pressure regions.  
(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 780 712 20/14 17/2.1  
ARMY COMMUNICATIONS COMMAND FORT HUACHUCA ARIZ ADVANCED  
CONCEPTS OFFICE

Workshop on Radio Systems in Forested and/or  
Vegetated Environments. (U)

DESCRIPTIVE NOTE: Technical rept.,  
FEB 74 313P Wait, J. R. ; Ott, R. H. ;  
Teifer, T. ;  
REPT. NO. ACC-ACO-1-74

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Summaries of 20 Technical Papers  
and 4 Working Group Reports presented at subject  
Workshop held at Fort Huachuca, Ariz., on 6-9 Nov  
73.

DESCRIPTORS: \*Electromagnetic wave propagation,  
\*Radio transmission, \*Meetings, Reviews, State  
of the art, Jungles, Forests, Environments,  
Radar, Losses, Propagation, Spectra,  
Utilization, Electrical properties, Vegetation,  
Southeast Asia, Computerized simulation  
IDENTIFIERS: SEACORE Project (U)

The purpose of the Workshop was to review the  
state-of-the-art in the theory of operation and  
design of radio systems for which the air/earth  
interface becomes a controlling factor. Each of the  
twenty technical papers are presented in summary,  
with the name of the author, his affiliation and  
address for each. The papers are principally  
devoted to radio and radar propagation in jungles and  
forests, path loss predictions, electrical  
characteristics of the forest and earth media, and  
lateral wave applications. The Working Group  
reports cover: (1) Application of Antenna and  
Propagation Theory; (2) Spectrum Usage  
Below 300 MHz (including UHF Radio 225-400  
MHz, but exclusive of radar); (3) Spectrum  
Usage above 300 MHz (including radar above 30  
MHz, but exclusive of UHF radio 225-400 MHz);  
and, (4) Environmental Descriptions (in  
relation to propagation and system performance  
modeling). Appendices provide names and addresses  
of all attendees, and a bibliographic summary of  
reports and articles from Project SEACORE.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 780 688 5/9  
HUMAN RESOURCES RESEARCH ORGANIZATION ALEXANDRIA VA

Simulation and Aircrew Training and  
Performance. (U)

DESCRIPTIVE NOTE: Professional paper,  
APR 74 15P Prophet, Wallace W. ; Caro,  
Paul W. ;  
REPT. NO. HUMRRO-PP-4-74

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at OCRD Conference, Fort  
Rucker, Ala., Nov. 73.

DESCRIPTORS: \*Flight crews, \*Training devices,  
Army personnel, Flight simulators, Cost  
effectiveness, Aeronautics, Training, State of the  
art, Reviews (U)

The paper outlines some major areas of use of  
simulation in Army Aviation and comments on  
current research. Equipment development, crew  
performance studies, concept development and training  
are discussed. Only in the training area has the  
Army made substantial progress. A broad program  
of simulation research with emphasis on engineering  
and behavior is suggested toward the goal of  
improving aircrew performance. There are  
significant simulation research problems unique to  
the Army which need to be worked out.  
(Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 780 440

11/2 21/5

NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER ANNAPOLIS  
MDCeramics for Gas Turbine Applications (A  
State-of-the-Art Survey).

(U)

74

37P

Dapkunas, S. J. ;

REP' NSRDC-4199, NSRDC-28-769

PR 22

## UNCLASSIFIED REPORT

DISCUSSION: \*Ceramic materials, Gas turbines,  
Rev. 0. State of the art. Silicon nitrides,  
Silicon carbides, Hot pressing, Mechanical  
properties, Rupture, Thermal shock, Impact  
strength, Tensile properties, Stresses, Creep,  
Fatigue (Mechanics), Oxidation, Corrosion,  
Heat

(U)

Silicon nitride and silicon carbide are shown to be  
the ceramics having the most promise, with major  
efforts currently under way to develop these  
materials for use in the near future. Mechanical  
properties and data on oxidation and hot corrosion  
have been compiled and presented for comparison with  
those of currently available superalloys. These  
comparisons show hot-pressed ceramics to have  
strength and environmental resistance superior to  
nickel- and cobalt-base superalloys at elevated  
temperatures but lacking in impact strength.  
Reaction-sintered silicon nitride is shown to be a  
low-strength material. Hot-pressed silicon nitride  
and silicon carbide are expected to find application  
in situations where strength and reliability rather  
than cost are determining factors, whereas reaction-  
sintered silicon nitride offers distinct advantages  
when low cost achieved through mass production is of  
great importance for lower stress applications.  
(Modified author abstract)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 778 207

19/1 13/8

RESEARCH TRIANGLE INST DURHAM N C

Characteristics of Non-Military  
Explosives.

(U)

DESCRIPTIVE NOTE: Final rept.,

FEB 74 81P

Lipens, R. ; Handy, R. W. ;

Harrison, J. W. ;

CONTRACT: DAAK02-73-C-0128

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Sponsored in part by Naval  
Explosive Ordnance Disposal Facility.

DESCRIPTORS: \*Technology, \*State of the art,  
\*Explosives, Reviews, Manufacturing, Bombs,  
Chemical composition, Detection, Vapors, Covert  
operations  
IDENTIFIERS: \*Homemade bombs

(U)  
(U)

The report describes the composition of commercial  
explosives and explosive materials used for  
clandestine bomb fabrication.

(U)



## UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 777 542 9/2  
EUROPEAN RESEARCH OFFICE LONDON (ENGLAND)Hybrid Computer Technology in Europe. A  
State of the Art Survey.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
FEB 74 63P Enslow, Philip H. , Jr;  
REPT. NO. ERO-1-74

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Hybrid computers, \*Europe, \*State of  
the art, Analog computers, Digital computers,  
Digital differential analyzers, Manufacturing,  
Universities, Great Britain

(U)

A survey of the state-of-the-art of hybrid (analog-digital) computer technology in Europe was made with the specific objective of identifying and evaluating projects, either in progress or completed, that were advancing the hardware, software, or application technologies. Over 50 people were interviewed by telephone and several installations were visited. Projects of significant importance were found covering the subjects of automatic patching, all-digital systems (e.g., digital differential analyzer), compilers supporting the full hybrid system, interactive hybrid computing, applicability of hybrid solutions and their cost effectiveness, and advanced applications.

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## UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 777 046 13/2  
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIFTrenching on Shore and In the Ocean in  
Arctic Regions: State-of-the-Art  
Survey.

(U)

DESCRIPTIVE NOTE: Technical note,  
MAR 74 54P Hironaka, M. C. ;  
REPT. NO. NCEL-TN-1335

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Trenching, \*Arctic regions, \*State  
of the art, Underground, Underwater, Cables,  
Pipelines

(U)

The objective of this study was to identify present techniques, procedures, and equipment that could be used for developing trenches for cables and pipelines in sea-to-shore installations in arctic regions. In pursuing this objective, a literature search was performed. The results of that effort are reported herein. Factors influencing polar trenching operations include: (1) materials to be trenched, (2) properties of permafrost and frozen ground, (3) depth to permafrost or frozen ground, (4) seafloor ice scoring, (5) oceanographic factors, and (6) seasonal effects. For sea-to-shore cable and pipeline installations, present trenching methods have some limitations; thus, it is recommended that a trenching device capable of operating on land, through the surf zone, and in deep water be developed to trench through all material including rock and which uses high pressure water jetting, normal water jetting, and suction dredging techniques. (Modified author abstract)

(U)

AD-A066 401

DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA  
STATE OF THE ART REVIEWS. (U)  
MAR 79

F/6 5/2

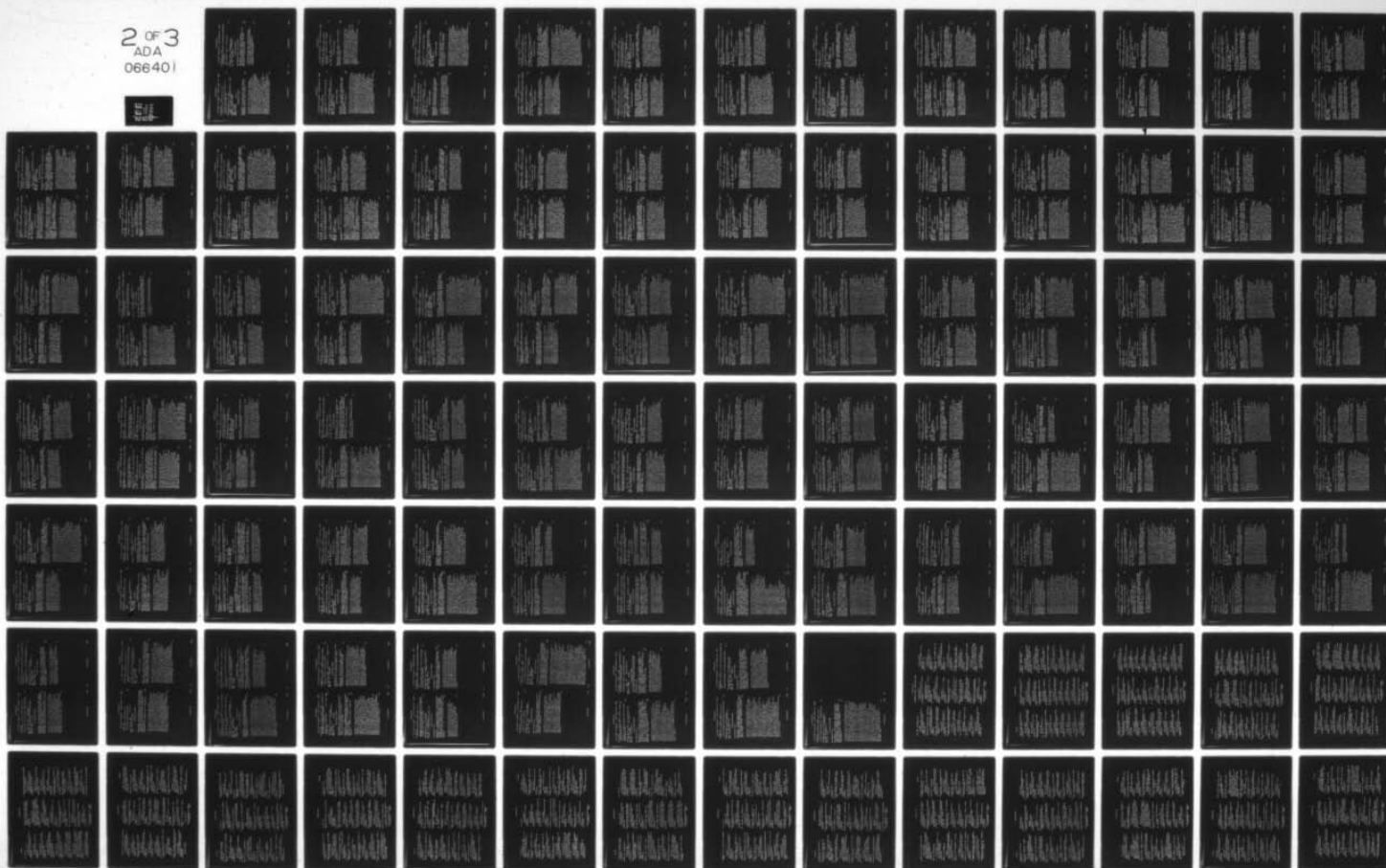
UNCLASSIFIED

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 776 776 5/9  
HUGHES AIRCRAFT CO CULVER CITY CALIFA Survey of the Present State-of-the-Art In  
Learning Center Operations.

(U)

DESCRIPTIVE NOTE: Final rept.,

FEB 74 115P Sullivan, Dennis J. ; Smith,  
Edgar A. ; Fillingier, Ronald H. ;

CONTRACT: F4:609-72-C-0033

PROJ: AF-1121

TASK: 1121011

MONITOR: AFHRL

TR-74-11

UNCLASSIFIED REPORT

DESCRIPTORS: \*Learning. \*Facilities, Training,  
Education, Individualized training, Automation,  
Assessment, State of the art, Surveys

(U)

The report summarizes a survey of selected military, industrial, government, and academic learning centers. Documentation of 28 learning center programs is recorded and illustrated. This documentation includes primary characteristics and a description of operational procedures and experience at the learning centers. Learning centers deemed effective were (1) designed to meet a clearly defined and existing instructional need (and typically included student performance requirements), (2) administered under a unified control of courseware content and production quality, and (3) largely developed and produced their own courseware to meet the specific needs. In general, student time savings and increased training effectiveness were reported. Learning centers can provide cost-effective instruction. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 776 642 5/2  
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
PARIS (FRANCE)Semi Automatic Indexing - State of the  
Art.

(U)

DESCRIPTIVE NOTE: AGARDograph rept.,

FEB 74 26P Fangmeyer, H. ;

REPT. NO. AGARD-AG-179

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO furnished.

DESCRIPTORS: \*Subject indexing, Automation,  
Information processing, Computer applications, Man  
machine systems, State of the art, Reviews  
IDENTIFIERS: Automatic indexing

(U)

(U)

Contents: Semi-automatic indexing techniques;  
Primary or internal index production (derivative  
indexing); Secondary index production  
(assignment indexing); Production and  
maintenance of indexing aids.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 776 261 4/2  
GEOMET INC ROCKVILLE MD

Present Capabilities to Modify Warm Fog and Stratus.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
JAN 74 109P Moschandreas, Demetrios J. ;  
REPT. NO. GEOMET-EF-300  
CONTRACT: N00014-71-C-0271  
PROJ: NR-082-275

UNCLASSIFIED REPORT

DESCRIPTORS: \*Fog. \*Weather modification. \*State  
of the art. Cloud seeding. Stratus clouds. Wake,  
Heating. Computerized simulation,  
Instrumentation  
IDENTIFIERS: \*Fog dispersal

(U)  
(U)

Numerical model simulations, chamber tests, and field experiments are the three scientific approaches used to investigate the modification of warm fog and stratus. This study is an in-depth review of the literature on warm fog dissipation; both theoretical and experimental projects are reviewed and critical comments are made on the reported claims. Most all the projects on warm fog modification are summarized in various tables while a few are analyzed in a more detailed fashion. Special emphasis is put on the sponsoring agencies; the goals, objectives, and the amounts allocated by the various research sponsoring organizations are also reviewed. The need for greater statistical analysis in evaluating the results of field experiments is noted. Among the numerous techniques used to improve visibility, two are proposed as the most promising: the thermal dissipation of warm fog and stratus, and the combination of the seeding and helicopter techniques.  
(Modified author abstract)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 775 227 6/5  
OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)

British Medical Research Council's Report  
1972-1973,

(U)

NOV 73 33P Frisch, Arthur W. ;  
REPT. NO. ONRL-R-28-73

UNCLASSIFIED REPORT

DESCRIPTORS: \*Great Britain, \*Medical research,  
State of the art, Finance  
IDENTIFIERS: Grants

(U)  
(U)

The report provides an overview of some of the ongoing investigative activities in the United Kingdom. The total expenditure of Medical Research Council for 1971-72 was roughly 62.5 million dollars; this amount was increased to around 71 million during 1972-73. About half of the support was given in 5 of 16 disease categories which include infective and parasitic diseases (25), neoplasma (21), endocrine, nutritional and metabolic (18), mental disorders (21) and diseases of the nervous system and sense organs (24).

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 775 226

9/5

OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)

Conference on 'Hybrid Microelectronics'.

(U)

DESCRIPTIVE NOTE: Conference rept.,

NOV 73 17P Enslow, P. H.; Waynick,

Arthur H.;

REPT. NO. ONRL-C-25-73

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Microelectronics, \*Hybrid circuits, Microminiaturization, State of the art, Reviews, Technology, Thick films, Conferences, Great Britain

(U)

A 'state of the art' survey of thick film and thin film hybrid circuits. combinations of discrete and deposited components, was the subject matter of the conference covered in the report. All facets of the technology are dealt with and specifically related to other forms of electronic assemblies.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 774 919

5/9

NAVY PERSONNEL RESEARCH AND DEVELOPMENT CENTER SAN DIEGO CALIF

Survey of Unit Performance Effectiveness Measures.

(U)

DESCRIPTIVE NOTE: Preliminary rept. Jan-Jun 73,

JAN 74 37P Larson, Orvin A.; Sander,

Stephen I.; Steinemann, John H.;

REPT. NO. MPRDC-TR-74-11

PROJ: PF55.522

TASK: PF55.522.105

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Marine Corps personnel, \*Combat readiness, \*Military training, \*Performance (Human), Efficiency, Assessment, State of the art, Reviews, Decision making, Military research

(U)

Improved measures of performance effectiveness are required by the Marine Corps for its combat unit training program in order to ensure the maintenance of appropriate levels of unit readiness in accordance with its assigned mission. A survey to determine the state-of-the-art of performance assessment systems and methodologies was conducted as an initial research phase in support of this requirement. A two-fold effort was made to review the research literature in performance evaluation, decision making, and unit training, and to gather first-hand information about existing performance assessment systems. A broad informational survey provides a number of alternative theoretical and practical methodologies which may serve as feasible approaches in ensuing research. (Author)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 774 188 13/6 14/2  
ARMY MATERIALS AND MECHANICS RESEARCH CENTER WATERTOWN  
MASS

The State of the Art of Nondestructive  
Testing of Tires.

DESCRIPTIVE NOTE: Tinal rept.,  
OCT 73 37p Vogel, Paul E. J. ;  
REPT. NO. AWMRC-PTR-73-9

## UNCLASSIFIED REPORT

DESCRIPTORS: \*Tires, \*Nondestructive testing,  
State of the art, Infrared detection, Holography,  
Ultrasonic tests, X rays, Eddy currents

The work was performed to provide a source of  
information on all known methods of nondestructive  
testing of tires. The report reflects the results  
of a tire testing survey which has been conducted  
over the past year. It represents an extensive  
literature search, visits to Army, Navy, Air  
Force, Department of Transportation  
installations, and to the National Bureau of  
Standards; to three major high performance tire  
rebuilders; ten tire test equipment manufacturers;  
three major test tracks; and 22 manufacturers of new  
tires. (Modified author abstract)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 767 327 9/2 1/3  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

All Application Digital Computer: Course  
Notes.

DESCRIPTIVE NOTE: Technical rept. 1972-1973,  
MAR 73 420P Syms, Gordon M. ;  
REPT. NO. NPS-53ZZ73031A

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*COMPUTERS, NAVAL AIRCRAFT), STATE-OF-THE-  
ART REVIEWS, DIGITAL COMPUTERS, THIN FILM STORAGE  
DEVICES, PROGRAMMING LANGUAGES, COMPUTER PROGRAMMING,  
DESIGN, REAL TIME, TIME SHARING, SYMPOSIA  
IDENTIFIERS: MAGNETIC FILM MEMORIES, MODULAR  
COMPUTERS, MULTIPROCESSING, AIRBORNE COMPUTERS,  
AVIONICS, BLOCK ORIENTED RANDOM ACCESS MEMORIES,  
BORAM (BLOCK ORIENTED RANDOM ACCESS MEMORIES), RANDOM  
ACCESS COMPUTER STORAGE

The report is a set of course notes, or text, on  
the proposed Navy All Application Digital  
Computer. The AADC, as it is called, is a  
programmer-oriented, general purpose, modular digital  
computer that was originally designed to meet all the  
1975-1985 Naval airborne data processing  
requirements, but it has now had its role generalized  
to include 'All Applications.' Since the AADC  
combines many of the most advanced computer hardware  
concepts now under development in the United  
States, the study of AADC should be of general  
interest. The all application role includes real-  
time and time-sharing computations, and special  
applications such as line concentrators, super  
modems, data channels and aircraft electric power  
controllers. This report includes a chapter on each  
of the following: a general introduction and  
summary of all chapters, AADC architectures, all  
application role, hardware technology, Data  
Processor Element, Master Executive  
Control, Signal Processing Element,  
evaluating AADC developments, High Order  
Language, and AADC applications. (Modified  
author abstract)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 766 974 9/2

STANFORD RESEARCH INST MENLO PARK CALIF

A Study of Fault-Tolerant Computing. (U)

DESCRIPTIVE NOTE: Final rept. 12 Jan 72-15 May 73,  
JUL 73 228p Neumann, Peter G. ; Goldberg,  
Jack ; Levitt, Karl N. ; Wensley, John M. ;

CONTRACT: N00014-72-C-0254, ARPA Order-1998

PROJ: SRI-1693

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*DATA PROCESSING, MAINTENANCE),  
(\*COMPUTERS, RELIABILITY(ELECTRONICS)), REAL TIME,  
MULTIPLE OPERATION, LOGIC CIRCUITS,  
FAILURE(ELECTRONICS), FAILURE, COST EFFECTIVENESS,  
REDUNDANT COMPONENTS, DESIGN, STATE-OF-THE-ART REVIEWS,  
DATA STORAGE SYSTEMS (U)  
IDENTIFIERS: LARGE SCALE INTEGRATED CIRCUITS,  
COMPUTERS, MULTIPLE OPERATION, ARITHMETIC AND LOGIC  
UNITS, VIRTUAL MEMORIES, COMPUTER SELF MAINTENANCE,  
\*FAULT TOLERANT COMPUTING, FAULT DETECTION (U)

The report presents the results of a study of  
fault-tolerant computing. Existing and new  
architectural techniques are evaluated for use in  
cost-effective systems attaining desired measures of  
correctness, availability and recovery. Various  
architectures and applications are considered.  
Appendices contain a brief census of 35 fault-  
tolerant systems, and a concise survey of 17  
representative systems, as well as detailed results  
on reliable memories and arithmetic. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 764 651 9/1 1/3

BATTELLE COLUMBUS LABS OHIO TACTEC

Lightning Protection Measures for Low-  
Altitude Tethered Balloon Systems. (U)

DESCRIPTIVE NOTE: Technical rept.,  
MAY 73 91P Eggers, P. E. ; Brown, J.  
B. , Jr. ; Ollila, R. G. ;

REPT. NO. A-4038(LP)

CONTRACT: DAAH01-72-C-0982, ARPA Order-2209

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*LIGHTNING ARRESTERS, \*BALLOONS),  
GROUND(ELECTRICAL), LASERS, PROTECTION, STATE-OF-THE-ART  
REVIEWS (U)

The findings of a comprehensive review of  
information relating to state-of-the-art techniques  
for atmospheric electrical protection are reported  
for both ground-based (tall buildings, towers,  
power transmission lines) and airborne (aircraft,  
rockets) systems. An assessment has been made as  
to the applicability of this information to the  
protection of tethered balloons. Candidate  
techniques for the atmospheric electrical protection  
of balloons with conducting and nonconducting tethers  
are discussed. In addition, the results of  
investigative studies of the technical feasibility of  
air-ionization techniques for lightning protection  
are discussed. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 764 357 10/2  
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB  
OHIO

Lithium-Doped Silicon Solar Cells State-of-the-Art.

(U)

DESCRIPTIVE NOTE: Technical rept. Apr-Oct 72.

JUN 73 42P Green, John M. ;

REPT. NO. AFAPL-TR-73-4

PROJ: AF-3145

TASK: 314519

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SOLAR CELLS, STATE-OF-THE-ART REVIEWS). SILICON, LITHIUM, DOPING, ENERGY CONVERSION, DAMAGE, RADIATION EFFECTS, INHIBITION, SPACECRAFT COMPONENTS, SPACE ENVIRONMENTS (U)

The present status of lithium-doped solar cells was investigated. Improvements in fabrication techniques have made possible lithium-doped cells which are 11.9% efficient at AMO conditions and 28 C. Cell areas of 12 square centimeters are now feasible. Annealing characteristics are highly temperature dependent with 60 C being the minimum array temperature for good performance. If the recovered power levels for N/P cells and P/N lithium-doped cells are compared for an array temperature of 80 C, it is found that the P/N lithium-doped cells are 15% higher after 10 to the 15th power/sq cm 1 Mev equivalent electrons and 85% higher after 10 to the 13th power/sq cm fission spectrum neutrons. Based on this survey the use of lithium-doped cells is recommended for missions which require solar arrays to operate at temperatures above 60 C, especially if the satellite must survive a nuclear weapon environment. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 763 948 13/8  
NAVAL INTELLIGENCE SUPPORT CENTER WASHINGTON D C  
TRANSLATION DIV

State of the Art of Argon-Arc Welding Technology in Joining Aluminum and Aluminum Alloys to Steel.

(U)

JUL 73 46P Belchuk, G. A. ; Ryabov, V.

R. ; Yumatova, V. I. ;

REPT. NO. NISC-Trans-3453

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of mono. Sovremennoe Sostoyanie Tekhnologii Argono-Dugovoi Svarki Alyuminiya i Ego Splavov so Stalyu, Leningrad, 1967 pii-27 p130-137 p163-173.

DESCRIPTORS: (\*INERT GAS WELDING, STATE-OF-THE-ART REVIEWS), WELDS, ALUMINUM, ALUMINUM ALLOYS, STEEL, INDUSTRIAL RESEARCH, CORROSION RESISTANCE, STORAGE TANKS, CRYOGENICS, USSR, STAINLESS STEEL, AUSTENITE IDENTIFIERS: TRANSLATIONS (U) (U)

Topics included are the use of alloyed filler metal, special features of welding aluminum alloy to 18-8(1Kh18N9T) steel, corrosion resistance of welded aluminum-alloy and steel joints, some examples of industrial application of argon-arc welding technology in joining aluminum and aluminum alloy to steel, some fields of application of chromium-nickel austenitic steels, and properties of the most widely-used Fe-Cr-Ni-Mn and Fe-Cr-Mn steels. (U)

## UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 763 194

5/9

HUMAN RESOURCES RESEARCH ORGANIZATION ALEXANDRIA VA

The State of Knowledge Pertaining to  
Selection of Cost-Effective Training  
Methods and Media.

(U)

DESCRIPTIVE NOTE: Technical rept..

JUN 73 127P Spangenberg, Ronald W. ;

Riback, Yair ; Moon, Harold L. ;

REPT. NO. HUMRO-TR-73-13

CONTRACT: DAH19-73-C-0004

PROJ: DA-2-Q-062107-A-745

TASK: 2-Q-062107-A-74500

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMY TRAINING, \*COST EFFECTIVENESS),  
(\*MANAGEMENT PLANNING AND CONTROL, ARMY TRAINING),  
OPTIMIZATION, STATE-OF-THE-ART REVIEWS, SELECTION,  
COSTS, INEQUALITIES  
IDENTIFIERS: \*COST ANALYSIS

(U)

(U)

Review and analysis of pertinent literature was the first step in research to develop criteria and procedures for optimal selection of cost-effective methods and media for use in Army training. Existing methods-media selection procedures, training cost-analysis procedures, and suggested approaches for developing such procedures are criticized, although portions of some of these may be useful in developing procedures for Army use. Possible approaches for removing inadequacies are discussed. (Modified author abstract)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 762 068

9/2

MITRE CORP MCLEAN VA

Survey of Computer Networks.

(U)

DESCRIPTIVE NOTE: Technical rept. Jan-Apr 71,  
SEP 71 91P Peterson, Jack J. ; Veit,

Sandra A. ;

REPT. NO. MTP-357

CONTRACT: F19628-71-C-0002

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*DATA PROCESSING, NETWORKS), STATE-OF-THE-  
ART REVIEWS, DATA TRANSMISSION SYSTEMS, DESIGN  
IDENTIFIERS: ARPA COMPUTER NETWORK, \*COMPUTERS,  
\*NETWORKS

(U)

(U)

The paper presents the results of a survey of state-of-the-art computer networks. It identifies ten major networks: ARPA, COINS, CYBERNET, the Distributed Computer Systems, DLS, MERIT, Network/440, Octopus, TSS, and TUCC and outlines their capabilities and design. A tabular presentation of the most significant network features and a brief discussion of networks that were examined but rejected for the survey are also included. (Author)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 761 614 5/9  
NAVAL PERSONNEL RESEARCH AND DEVELOPMENT LAB WASHINGTON D  
C

Computer Models for Manpower and Personnel  
Management: State of Current Technology  
(with Emphasis on Navy Operational  
Models), Appendix A. Compendium of Models  
and Related Manpower/Personnel Programs and  
Studies.

(U)

APR 73 667P Hutchins, Elmer S., Jr.;  
Prather, Rebecca C.; Barefoot, David B.; Flint,  
Barry D.;  
REPT. NO. WTR-73-25A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Apr 73, AD-  
761 613.

DESCRIPTORS: (\*PERSONNEL MANAGEMENT, MATHEMATICAL  
MODELS), (\*MANAGEMENT PLANNING AND CONTROL, MANPOWER),  
(\*MANPOWER, NAVY), NAVAL PERSONNEL, STATE-OF-THE-ART  
REVIEWS, COMPUTER PROGRAMMING, BIBLIOGRAPHIES, NAVAL  
RESEARCH, MILITARY REQUIREMENTS (U)  
IDENTIFIERS: MANAGEMENT INFORMATION SYSTEMS, (U)  
EVALUATION

The document is an appendix to a Naval research  
study conducted to ascertain the current state of  
computer modelling technology in the Navy.  
Specifically, the area of manpower/personnel  
management planning and resources management.  
(Modified author abstract) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 761 613 5/9  
NAVAL PERSONNEL RESEARCH AND DEVELOPMENT LAB WASHINGTON D  
C

Computer Models for Manpower and Personnel  
Management: State of Current Technology  
(with Emphasis on Navy Operational  
Models).

(U)

APR 73 332P Hutchins, Elmer S., Jr.;  
Prather, Rebecca C.; Barefoot, David B.; Flint,  
Barry D.; Letsky, Michael;  
REPT. NO. WTR-73-25

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Apr 73, AD-  
716 614.

DESCRIPTORS: (\*PERSONNEL MANAGEMENT, MATHEMATICAL  
MODELS), (\*MANAGEMENT PLANNING AND CONTROL, MANPOWER),  
(\*MANPOWER, NAVY), NAVAL PERSONNEL, STATE-OF-THE-ART  
REVIEWS, COMPUTER PROGRAMMING, BIBLIOGRAPHIES, NAVAL  
RESEARCH, MILITARY REQUIREMENTS (U)  
IDENTIFIERS: MANAGEMENT INFORMATION SYSTEMS, (U)  
EVALUATION

Within the field of manpower and personnel  
management over 230 computer models are reported and  
a significant number are exposed to an examination of  
their techniques and areas of application. In  
addition, 102 related studies and programs are  
identified. A strategy for performing a technical  
evaluation is developed and a functional taxonomy of  
computer models designed. A review of the  
questionnaire technique employed in the data  
acquisition phase of the project, is included. A  
glossary of modelling terms and a bibliography is  
also included. A by-product of this research is the  
Sizeable Compendium of Models and Related  
Manpower/Personnel Programs and Studies  
(listed as Appendix 'A' and published under  
separate cover as WTR 73-25A). (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 761 103 19/6  
WATERVLIET ARSENAL N Y

Infantry Support Weapons System Technology  
(Project DES-VAL). A Review of  
Mathematical Models Relevant to Automatic  
Weapons.

DESCRIPTIVE NOTE: Technical rept.,  
MAR 73 161P Simkins, Thomas E. ;  
Vasilakis, John D. ; Carofano, Garry C. ;  
Scavullo, Maurice A. ; Racicot, Ronald L. ;  
REPT. NO. R-WV-T-6-12-73  
PROJ: DA-1-W-562603-A-005

(U)

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*MATHEMATICAL MODELS, STATE-OF-THE-ART  
REVIEWS), (\*MACHINE GUNS, MATHEMATICAL MODELS),  
AUTOMATIC WEAPONS, ABSTRACTS, DESIGN, VIBRATION, HEAT  
TRANSFER, STRESSES, PERFORMANCE(ENGINEERING)  
IDENTIFIERS: COMPUTER AIDED DESIGN

(U)

The principal effort of the math-modeling portion  
of Project DES-VAL (Design and Evaluation  
of 20-40mm Gun Systems) was in establishing an  
up-to-date knowledge of existing computer models of  
automatic weapons. Included in this report is a  
listing of approximately four hundred documents  
surveyed for relevance in five separate categories,  
i.e.: dynamics, vibration, stress, heat transfer,  
reliability, and math-modeling. A brief account is  
given of the general course of math-modeling  
including recommendations for future work.  
(Author)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 760 639 17/7  
GEORGIA INST OF TECH ATLANTA COMMUNICATIONS DIV

Electronic Facility Bonding, Grounding and  
Shielding Review.

(U)

DESCRIPTIVE NOTE: Final rept.,  
NOV 72 121P Denny, H. W. ; Holder, F.  
P. ; Robinette, S. L. ; Toler, J. C. ; Moody,  
J. A. ;  
CONTRACT: DOT-FA72WA-2850  
MONITOR: FAA-RD 73-51

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIR TRAFFIC CONTROL SYSTEMS,  
RELIABILITY(ELECTRONICS)), ELECTRONIC EQUIPMENT,  
GROUND(ELECTRICAL), ELECTROMAGNETIC SHIELDING, BONDING,  
LIGHTNING ARRESTERS, STATE-OF-THE-ART REVIEWS,  
RADIOFREQUENCY INTERFERENCE, REDUCTION, ELECTROMAGNETIC  
COMPATIBILITY, SAFETY

(U)

Air traffic control electronic facilities, earth  
grounding requirements are examined in terms of the  
needs for lightning protection is reviewed to  
determine the ground system requirements necessary to  
protect personnel, equipment, and facilities. A  
signal ground reference system is developed based on  
relative tradeoffs between interference reduction  
principles, implementation practicalities, and cost  
considerations. Equipment and facility shielding  
needs are reviewed from the perspectives of  
electromagnetic compatibility enhancement and  
personnel hazard prevention. Bonding techniques  
and practices are summarized with special emphasis  
placed on maintenance requirements. Finally,  
useful ground system maintenance test procedures are  
described and additional cost factors not emphasized  
elsewhere are discussed.

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 759 165 20/4  
AEROSPACE RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

Rarefied Gasdynamics.

DESCRIPTIVE NOTE: Final rept.,  
FEB 73 18P Petty, James S.;  
REPT. NO. ARL-73-0012  
PROJ: AF-7064  
TASK: 706404

(U)

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*RAREFIED GAS DYNAMICS, TRANSPORT PROPERTIES), CONTINUUM MECHANICS, FLAT PLATE MODELS, PIPES, HEAT TRANSFER, SHOCK WAVES, WALLS, STATE-OF-THE-ART REVIEWS, MATHEMATICAL MODELS, BOUNDARY LAYER, CONTROL  
IDENTIFIERS: \*GAS DYNAMICS (U)  
(U)

In a study of basic phenomena in rarefied gas flows, particular attention was given to transport phenomena. Principal items of research included studies of the rarefied Rayleigh problem, Pousselle-like flow, anomalous heat transfer, normal shock reflection, and a state-of-the-art survey of rarefied gas-dynamics. (Author Modified Abstract)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 758 807 5/10  
MICHIGAN UNIV ANN ARBOR HUMAN PERFORMANCE CENTER

Information Encoding in Training for  
Efficient Access in Memory.

(U)

DESCRIPTIVE NOTE: Interim rept. 1 Jan-31 Dec 72,  
JAN 73 7P Melton, Arthur W.;  
CONTRACT: F44620-72-C-0038  
PROJ: AF-9778  
MONITOR: AFOSR TR-73-0556

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*INFORMATION RETRIEVAL, MEMORY(PSYCHOLOGY)), LEARNING, RECALL, CODING, PERFORMANCE(HUMAN), STATE-OF-THE-ART REVIEWS, TRAININ  
IDENTIFIERS: \*INFORMATION PROCESSING(PSYCHOLOGY) (U)  
(U)

Coding processes involved in storing and retrieving information in event, simple associative, and serial associative learning were examined in experiments and literature-reviews reported in four presentations to scientific meetings, one review of quantitative theory in press, and nine scientific articles in preparation. A new technique for identifying and analysing trainee-determined coding units in serial learning and the 'access cues' to these units provides a promising methodology for detecting learner organization of serial tasks and compatible management of training schedules. Other studies extend and refine the hypothesis that encoding variability during learning, as contrasted with rote repetition, is beneficial for long-term recall. (Author Modified Abstract)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 758 447 13/2  
ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN  
ILL

Pavement Distress Identification and  
Repair.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
MAR 73 140P Barenberg, Ernest J. ;  
Bartholomew, Charles L. ; Hennin, Moreland ;  
REPT. NO. CERL-TR-P-6  
CONTRACT: DACA88-71-C-0013

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*PAVEMENTS, MAINTENANCE), DEGRADATION,  
IDENTIFICATION, STATE-OF-THE-ART REVIEWS (U)

The report is a comprehensive state-of-the-art  
report on pavement distress, its identification and  
repair. It presents information to enable  
technically trained, but relatively inexperienced,  
personnel to identify pavement distress types in the  
field and plan repair or maintenance work  
accordingly. (Author Modified Abstract)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 756 452 20/6 15/5  
LIFE SYSTEMS RESEARCH INST LOS ANGELES CALIF

Feasibility Study of Automatic Fabrication of  
Spectacle Lenses in the Field. (State-of-  
the-Art Survey).

(U)

DESCRIPTIVE NOTE: Technical rept. 14 Apr-13 Oct 69,  
JAN 70 148P Celentano, J. T. ;  
REPT. NO. LSRI-69R113  
CONTRACT: DADA17-69-C-9062

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with Univis,  
Inc., Fort Lauderdale, Fla. See also report dated  
Aug 69, AD-756 451.

DESCRIPTORS: (\*EYEGLASSES, PLASTIC LENSES), (\*PLASTIC  
LENSES, MANUFACTURING), STATE-OF-THE-ART REVIEWS,  
POLYESTER PLASTICS, AUTOMATIC, COATINGS, OPHTHALMOLOGY,  
DESIGN, SAFETY, PATENTS, MATERIALS, ARMY RESEARCH,  
MILITARY MEDICINE (U)

A literature survey was accomplished, including  
library and patent searches and vendor contacts.  
The literature was searched for articles related to  
plastic lenses, ophthalmic and optical techniques and  
products, automated lens fabrication techniques,  
and plastic automation fabrication techniques.  
Approximately 50,000 titles were reviewed and more  
than 300 articles and patents considered applicable.  
(Author-PL)

(U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 756 015 20/5  
ILLINOIS UNIV URBANA DEPT OF ELECTRICAL ENGINEERING

WA1-Far-Infrared Molecular Lasers, (U)

AUG 72 11P Coleman, Paul D. ;

CONTRACT: AF-AFOSR-2154-72

PROJ: AF-9768

TASK: 976802

MONITOR: AFOSR TR-73-0330

## UNCLASSIFIED REPORT

Availability: Pub. in IEEE Jnl. of Quantum Electronics, VQE-9 n1 p130-138 Jan 73.

SUPPLEMENTARY NOTE: Revision of report dated 7 Jul 72.

DESCRIPTORS: (\*INFRARED LASERS, STATE-OF-THE-ART REVIEWS), GAS LASERS, EXCITATION, ELECTRON IRRADIATION, OPTICAL PUMPING, ELECTRON TRANSITIONS, CHEMICAL REACTIONS (U)

IDENTIFIERS: WATER VAPOR LASERS, \*MOLECULAR LASERS, HELIUM NEON LASERS, HYDROGEN CYANIDE LASERS, HYDROGEN SULFIDE, SULFUR DIOXIDE LASERS, FAR INFRARED RADIATION (U)

A summary is presented of recent accomplishments and the state of the art of far-infrared (far-IR) molecular lasers. Problems of excitation, laser line assignments, relaxation, and absolute frequency measurements are discussed. Predictions of future far-IR developments are made. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 755 780 13/1 20/12  
AEROSPACE CORP EL SEGUNDO CALIF ENGINEERING SCIENCE OPERATIONS

Survey of Cryogenic Cooling Techniques. (U)

DESCRIPTIVE NOTE: Rept for 1 Nov 70-15 May 72, OCT 72 188P Donabedian, Martin ;

REPT. NO. TR-0073(3901-01)-1

CONTRACT: F04701-72-C-0073

MONITOR: SAMSO TR-73-34

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*REFRIGERATION SYSTEMS, \*CRYOGENICS), THERMODYNAMIC CYCLES, REFRIGERANT COMPRESSORS, SPACECRAFT, SPACE ENVIRONMENTS, LIQUEFIED GASES, STORAGE, STATE-OF-THE-ART REVIEWS (U)  
IDENTIFIERS: CRYOGENIC REFRIGERATORS (U)

A survey was made to determine the state of the art of various methods of cooling to cryogenic temperatures for potential adaptation to spaceborne systems. The study included evaluation of mechanical closed-cycle refrigerators, open-cycle expendable systems, passive radiation concepts which utilize the low temperature of the deep space environment, and thermoelectric devices. The following mechanical refrigeration cycles were evaluated: Vuilleumier, Stirling, Gifford-McMahon/Solvay, Brayton and Claude. Open-cycle expendable systems evaluated were high-pressure gas coupled with Joule-Thomson expansion, cryogenic liquids in both the subcritical and supercritical state, solidified cryogenics, and liquids storable at room temperature. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 755 116 14/2 14/5  
ARMY MATERIALS AND MECHANICS RESEARCH CENTER WATERTOWN  
MASS

State of the Art Survey on Holography and  
Microwaves in Nondestructive Testing. (U)

DESCRIPTIVE NOTE: Monograph series,  
SEP 72 109P Grubinskas, Robert C. ;  
REPT. NO. AWMRC-MS-72-9  
PROJ: DA-M716350-PEMA

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the International  
Meeting of the Technical Cooperation Program's  
Working Panel 4, Sub-Group P, Evaluation  
Methods for Materials and Materials in Structures  
(13th), held in Anaheim, Calif., on 20-29 Apr  
71.

DESCRIPTORS: (\*NONDESTRUCTIVE TESTING, STATE-OF-THE-ART  
REVIEWS). (\*STEREOPHOTOGRAPHY, NONDESTRUCTIVE TESTING).  
PHOTOGRAPHY, PHOTOGRAPHIC FILM, PHOTOGRAPHIC EQUIPMENT,  
LASERS, ULTRASONIC RADIATION, MICROWAVES, MICROSCOPY,  
INTERFEROMETERS (U)  
IDENTIFIERS: HOLOGRAPHY, MICROWAVES, ACOUSTIC  
HOLOGRAPHY, \*HOLOGRAPHY, HOLOGRAPHIC MICROSCOPY,  
HOLOGRAPHY, INTERFEROMETERS, ULTRASONIC HOLOGRAPHY,  
ULTRASONIC TESTS (U)

The object of this monograph is to trace the  
evolution of relatively new nondestructive testing  
techniques arising from the vigorously active fields  
of holography and microwaves. Highlighted areas  
include the description of existing techniques and a  
discussion of their capabilities and limitations.  
Receiving primary emphasis are the applications of  
these techniques to the evaluation of materials,  
structures, and end items for quality assurance  
purposes. An extensive reference and  
bibliographical section has also been included to  
increase the usefulness of this document and to  
provide a launching point for further study.  
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 753 814 5/1  
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA SCIENCE AND  
TECHNOLOGY DIV

The Evaluation of Research Supported by a  
Mission-Oriented Agency-Structured  
Approaches. Volume I: On Measures of  
Research Effectiveness, (U)

DEC 71 54P Molander, Roger C. ; Milton,  
A. Fenner ; Selwyn, Philip A. ;  
REPT. NO. P-753-Vol-1  
CONTRACT: DAHCl5-67-C-0011  
MONITOR: IDA/HQ 71-12639

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Dec 71, AD-  
753 815.

DESCRIPTORS: (\*SCIENTIFIC RESEARCH, \*RESEARCH  
MANAGEMENT), (\*DEPARTMENT OF DEFENSE, SCIENTIFIC  
RESEARCH), MANAGEMENT PLANNING AND CONTROL, FEASIBILITY  
STUDIES, STATE-OF-THE-ART REVIEWS, ORGANIZATIONS (U)  
IDENTIFIERS: MANAGEMENT INFORMATION SYSTEMS,  
METHODOLOGY, INTERVIEWS (U)

The feasibility of developing structured approaches  
to prospective and retrospective evaluation of basic  
research supported by a mission-oriented agency,  
specifically the Advanced Research Projects  
Agency, is examined. It is argued that the  
existence of an applied technological mission for the  
agency, combined with the unreliability of assessing  
the potential applied impact of individual research  
projects, calls for an approach to research  
evaluation which (1) measures scientific  
disciplines and subdisciplines according to their  
relevance to the agency's mission and (2)  
measures individual research projects within these  
categories against a yardstick of scientific  
excellence. Potential structured research methods  
to accomplish these tasks are considered.  
(Author) (U)



## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 753 655 6/5  
NAVAL MEDICAL RESEARCH UNIT NO 2 TAIPEI (TAIWAN)

Introduction to Medical Research. (U)

71 1P Joseph, Sammy William ;  
REPT. NO. NAMRU-2-TR-527

## UNCLASSIFIED REPORT

Availability: Pub. in Medical Jnl. of the  
Indonesian Armed Forces, v3 n6 p8-10 Nov 71.DESCRIPTORS: (\*MEDICAL RESEARCH, \*INDONESIA). INFECTIOUS  
DISEASES, BACTERIA, VIRUS DISEASES, STATE-OF-THE-ART  
REVIEWS (U)

During 1970, medical researchers developed means for detecting hidden heart attacks, discovered why ex-smokers get fat, created a biologically active gene and made a lysosome. Physiologists continued to debate the structure of membranes, and cigarettes were more and more implicated as contributors to lung cancer. The major challenges confronting medical science to day are Cancer, hypertension, arteriosclerosis, and geriatrics. More recently, at NAMRU-2 the microbiology section has been involved in several areas of medical research including enteric diseases, fevers of undetermined origin, zoonotic disease and gangrenous stomatitis. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 753 000 21/5 20/1  
NAVAL AIR PROPULSION TEST CENTER TRENTON N J PROPULSION  
TECHNOLOGY AND PROJECT ENGINEERING DEPTState-of-the-Art Review of Turbine Engine  
Inlet Noise. (U)DESCRIPTIVE NOTE: Final technical rept.,  
NOV 72 159P Benham, Robert B. ;  
REPT. NO. NAPTIC-PE-6  
PROJ: A330-5360/218-B/1F32-432-308

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET ENGINE NOISE, \*TURBOJET INLETS),  
(\*TURBOFAN ENGINES, JET ENGINE NOISE), DESIGN, NOISE,  
ATTENUATION, INLET GUIDE VANES, DUCT INLETS, VORTICES, (U)  
ACOUSTIC INSULATION, STATE-OF-THE-ART REVIEWS (U)  
IDENTIFIERS: VORTEX SHEDDING, NOISE REDUCTION, NOISE  
POLLUTION, TF-34 ENGINES (U)

The report points out that turbine-type engine design is evolving in a direction which will make fan and compressor turbomachinery noise continually more obtrusive. The TF34 engine is representative of 'state-of-the-art' high bypass ratio subsonic turbofan technology. It contains no inlet noise-suppression design and the inlet noise exceeds Federal Air Regulation Part 36 take-off sideline noise limits by about 6PNdb. There are descriptions and theoretical presentations explaining the principal mechanisms producing the three inlet noise contributors: interaction tones, combination tones, and broadband radiation. It is shown that noise control can be affected either at the rotor-stator source or with nacelle installation attenuation. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 752 890 1/3 15/5  
 NORTHROP CORP PALOS VERDES PENINSULA CALIF ELECTRONICS  
 DIV

UH-1 Test Bed Program. Volume I. (U)

DESCRIPTIVE NOTE: Final rept..  
 JUN 72 413P Butcher, Robert R. ; Kirby,  
 Russell , Jr.; Nakakinara, John ; Watkins, T. C.

REPT. NO. NCRT-71-293A  
 CONTRACT: DAAJ01-70-C-0828  
 PROJ: DA-1-F-164204-DC-32  
 TASK: 1-F-164204-DC-3201  
 MONITOR: USAAVSCOM TR-72-19-Vol-1

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-752 891.

DESCRIPTORS: (\*HELICOPTERS, \*CHECKOUT PROCEDURES),  
 (\*ARMY AIRCRAFT, MAINTENANCE), AUTOMATIC, STATE-OF-THE-  
 ART REVIEWS, FAILURE, TESTS (U)  
 IDENTIFIERS: MALFUNCTION DETECTION, UH-1 AIRCRAFT, UH-  
 1H AIRCRAFT (U)

The UH-1H helicopter test bed program was accomplished at the US Army Aeronautical Depot Maintenance Center (ARADMAC), Corpus Christi, Texas, during the period 4 October 1970 through 17 December 1971. The program objective was to determine the capability of state-of-the-art hardware to automatically accomplish inspection, diagnostic and prognostic maintenance functions on selected subsystems of the UH-1H helicopter. Northrop's hardware for the program is identified as a Maintenance Reporting System (MRS). Helicopter components, both serviceable and degraded, were run and monitored for malfunction discrimination by the MRS in ARADMAC test cells and in two UH-1H aircraft. Trending for prognosis was attempted while accumulating flight time on two additional UH-1H aircraft utilizing serviceable components. The test results demonstrated the objectives of the test bed program. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 750 742 20/9  
 AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

The Induction Arc, a State-of-the Art  
 Review. (U)

DESCRIPTIVE NOTE: Rept. for Feb-Jun 72,  
 OCT 72 78P Eckert, Hans U. ;  
 REPT. NO. TR-0073(3220-20)-2  
 CONTRACT: F04701-72-C-0073  
 MONITOR: SAMSO TR-72-227

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*PLASMA MEDIUM, \*ELECTRIC ARCS), MAGNETIC  
 FIELDS, GAS IONIZATION, ARGON, TRANSFORMERS, INDUCTANCE,  
 RADIOFREQUENCY, STATE-OF-THE-ART REVIEWS (U)  
 IDENTIFIERS: ARGON, PLASMAS(PHYSICS),  
 DIAGNOSIS(GENERAL), PLASMAS(PHYSICS) (U)

The induction arc is, in principle, a high-frequency transformer in which the secondary is formed by a thermal plasma. Since its invention in 1961, this arc has been the subject of over 100 investigations with widely differing goals. Information contained in the literature up to 1972, covering history, experimental techniques, theory, and applications, has been collected and reviewed. Fair agreement between experimental and theoretical data indicates that heat balance and skin effect are the two basic processes governing the arc plasma. This agreement appears to be limited by non-equilibrium effects for which no provisions have been made in the theoretical models. The absence of contamination by electrode material makes the induction arc suitable for applications where a clean plasma is essential. The most important industrial application may be in plasma chemistry, provided such an arc can be operated more efficiently. A promising approach is low-frequency operation directly from the power line by means of a sufficiently large non core. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 750 680 20/5  
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA JASON DIV

Report of the 1971 JASON Laser Summer Study.  
Volume II. Supporting Appendices A-M,

(U)

AUG 71 216P Asmus, John F. ;Case,  
Kenneth M. ;Dashen, Roger ;Javan, Ali ;Kelley,  
Paul ;  
REPT. NO. S-391-2  
CONTRACT: DAH015-67-C-0011  
MONITOR: IDA/HQ 71-13452

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Aug 71, AD-743 098.

DESCRIPTORS: (=LASERS, SCIENTIFIC RESEARCH), GAS LASERS, INFRARED LASERS, MEDICAL RESEARCH, RADIOBIOLOGY, OPTICAL COMMUNICATIONS, STEREOPHOTOGRAPHY, DATA STORAGE SYSTEMS, CHEMICAL INDUSTRY, PHOTOCHEMICAL REACTIONS, AIR POLLUTION, GEOPHYSICS, DISTANCE MEASURING EQUIPMENT, STRAIN GAGES, METEOROLOGICAL INSTRUMENTS, MANUFACTURING, NONDESTRUCTIVE TESTING, MINING ENGINEERING, SAFETY, ASTROPHYSICS, BIOPHYSICS, BIOCHEMISTRY, SYMPOSIA, STATE-OF-THE-ART REVIEWS (U)

IDENTIFIERS: LASER RADIOBIOLOGY, LASER RADIATION PROTECTION, DATA PROCESSING, OPTICAL DATA, HOLOGRAPHY, HOLOGRAPHIC INFORMATION STORAGE (U)

The volume contains a summary of the current state of the art in laser devices and associated technology, plus discussions of the current and potential uses of lasers in the following areas: medicine and biological research, communications, holography and information processing, chemical detection, atmospheric monitoring and air pollution the physical sciences, and ignition of controlled thermonuclear reactions. The current status of laser safety standards and laws is also discussed. These articles provide the background for the conclusions and recommendations given in Volume I. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 750 629 13/7 16/4 13/9  
HONEYWELL INC ST PAUL MINN RESEARCH DEPT

Adaptation of Fluid.c Control Technology to  
Missile Hardware Manufacturing.

(U)

DESCRIPTIVE NOTE: Final rept. 15 Dec 69-30 Jan 71,  
JUN 71 195P Zabsky, John M. ;Brown,  
James L. ;Merrill, Fred W. ;Whittlesey, Marc  
W. ;  
REPT. NO. 12179-FR  
CONTRACT: DAAH03-69-C-0481  
MONITOR: QL TR-71-3

UNCLASSIFIED REPORT

DESCRIPTORS: (\*GUIDED MISSILE COMPONENTS, \*MANUFACTURING), FLUIDICS, MACHINE SHOP PRACTICE, STATE-OF-THE-ART REVIEWS, FLUID AMPLIFIERS, CONTROL SYSTEMS, AUTOMATION, PRODUCTION CONTROL, MACHINE TOOLS IDENTIFIERS: \*FLUIDICS, EVALUATION (U) (U)

The report focuses on applying fluidic control technology to missile hardware production. Results from literature searches, mail surveys, and the observation of production processes in industry established the status of fluidics as an important control technology. By investigating several missile hardware production lines, 12 candidate systems using fluid.c controls are evaluated. The evaluation concerns the predicted performance over the present operation, the consideration of advantages and benefits, and the expansion of the system into commonality areas. (Author) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 750 101 13/3  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISS

Resin Concretes: A Literature  
Review.

(U)

DESCRIPTIVE NOTE: Final rept..  
SEP 72 29P  
REPT. NO. AEWES-Misc-Paper-C-72-21

Michael B. ;  
Petit, John E. ; Scholey,

CONTRACT: F33615-71-C-1950

PROJ: AF-643A

TASK: 63205F

MONITOR: AFAPL TR-72-11

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CONCRETE, \*POLYMERS), STATE-OF-THE-ART  
REVIEWS, PLASTICS, EPOXY RESINS, POLYESTER PLASTICS,  
PHYSICAL PROPERTIES (U)

Specialized investigations of resin concrete  
research are reviewed. The authors generally agreed  
on the advantages, disadvantages, and applications of  
resin concrete. A research program to provide  
design criteria and construction techniques for use  
by the Corps of Engineers is proposed. (Author,  
modified-PL) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 749 476 21/5  
BOEING CO SEATTLE WASH

Thrust Reverser and Thrust Vectoring  
Literature Review.

(U)

DESCRIPTIVE NOTE: Technical rept. Jul-Sep 71.  
APR 72 120P  
Michael B. ;  
Petit, John E. ; Scholey,

CONTRACT: F33615-71-C-1950

PROJ: AF-643A

TASK: 63205F

MONITOR: AFAPL TR-72-11

UNCLASSIFIED REPORT

DESCRIPTORS: (\*THRUST VECTOR CONTROL SYSTEMS, STATE-OF-  
THE-ART REVIEWS), (\*THRUST REVERSAL, STATE-OF-THE-ART  
REVIEWS), DESIGN, BIBLIOGRAPHIES, ABSTRACTS, TURBOJET  
ENGINES, TURBOFAN ENGINES, MOVABLE NOZZLES, EXHAUST  
GASES, DOWNWASH (U)  
IDENTIFIERS: JET IMPINGEMENT, JET PENETRATION (U)

The state-of-the-art of thrust reverser and thrust  
vectoring technology has been surveyed to identify  
the available test data and prediction methods in the  
literature. The literature review resulted in a  
bibliography of documents related to thrust reverser  
and thrust vectoring systems. The bibliography  
contains references to approximately 160 reports and  
is organized in three sections: Literature review  
summary, abstracts and data review summary.  
(Author) (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 748 989 21/5  
RAND CORP SANTA MONICA CALIFMeasuring Technological Change: Aircraft  
Turbine Engines.

JUN 72 48P Alexander, Arthur J. ;Nelson,

J. R. ;

REPT. NO: R-1017-ARPA/PR

CONTRACT: DAHC15-67-C-0141, F44620-67-C-0045

PROJ: ARPA Order-189

(U)

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*TURBOJET ENGINES, HISTORY), TURBOFAN  
ENGINES, TURBOPROP ENGINES, REGRESSION ANALYSIS,  
PERFORMANCE(ENGINEERING), STRUCTURAL MEMBERS,  
EXPERIMENTAL DESIGN, STATE-OF-THE-ART REVIEWS

(U)

The report estimates turbine engine parameter tradeoffs over time, using multiple regression analysis. Movement of the parameter tradeoff curve is defined as technological advance. The data base includes the first model of a given turbine engine to pass the model qualification test. The history of turbine engines strongly suggests that single parameter analysis cannot capture the richness of the development process. The rate of technological advance seems fairly constant over time. However, two major manufacturers have been ahead of the others in the level of technology. Comparison of Soviet and American equations revealed an early Soviet lead, reversed since the 1950s. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 748 092 15/3 13/13  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISSRecommended Long-Range Research Program for  
Blast-Loaded Structures,

(U)

NOV 66 60P Smith, E. F. ;Denton, D.

R. ;

REPT. NO. AEWES-Misc-Paper-1-825

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*SHELTERS, BLAST), (\*CIVIL DEFENSE,  
SHELTERS), STATE-OF-THE-ART REVIEWS, BIBLIOGRAPHIES,  
RESEARCH MANAGEMENT, STRUCTURAL PROPERTIES,  
FAILURE(MECHANICS), TEST METHODS, PLANNING

(U)

The Office of Civil Defense (OCD) is responsible for planning and providing fallout shelter spaces. Reinforced-concrete and masonry-type structures are efficient material systems for protection from gamma radiation (Fallout) and are utilized extensively as fallout shelters. A need new exists for information with which to evaluate the inherent protection provided by existing fallout shelters against airblast loads in low over-pressure regions. In the report, short- and long-range programs of research on building elements of blast-loaded structures are developed and discussed. Recommendations are also included on the nature, conduct, and scope of a research program which is believed to best meet the need of the OCD for information on the response of building elements to blast loads. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 747 366 8/10 8/13 13/13  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISS

State-of-the-Art of Marine Soil Mechanics  
and Foundation Engineering.

DESCRIPTIVE NOTE: Final rept.,  
AUG 72 182P Ling, Shun C. ;  
REPT. NO. AEWES-TR-S-72-11

(U)

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*SOIL MECHANICS, \*OCEAN BOTTOM),  
(\*FOUNDATIONS(STRUCTURES), UNDERWATER), OCEAN BOTTOM  
TOPOGRAPHY, OCEAN BOTTOM SAMPLING, GEOPHYSICAL  
PROSPECTING, MARINE ENGINEERING, TEST EQUIPMENT, STATE-  
OF-THE-ART REVIEWS (U)  
IDENTIFIERS: PILE STRUCTURES, SOIL STRUCTURE (U)

The report presents the state-of-the-art of marine soil mechanics and foundation engineering. The study involved an extensive literature search and personal contacts with individuals in Government and industry involved in offshore work. The fields of subbottom exploration, laboratory and in situ testing, soil properties, and marine foundation engineering were examined to delineate existing capabilities and limitations. The viewpoint taken was that of a soils and foundation engineer attempting to plan, design, and construct an offshore foundation with the available knowledge and experience. The study was limited to water depths of 600 ft or less. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 747 336 11/8  
ESSO RESEARCH AND ENGINEERING CO LINDEN N J GOVERNMENT  
RESEARCH LAB

Boundary Lubrication.

DESCRIPTIVE NOTE: Final rept. Jun 69-Jun 72,  
JUN 72 353P Beerbower, Alan ;  
REPT. NO. GRU.1GBEN.72  
CONTRACT: DAMC19-69-C-0033

(U)

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Scientific and Technical  
Applications Forecast (STAF).

DESCRIPTORS: (\*LUBRICATION, STATE-OF-THE-ART REVIEWS),  
LUBRICANTS, LUBRICANT ADDITIVES, WEAR RESISTANCE,  
CHEMICAL REACTIONS, FRICTION, METALLURGY, FILMS,  
MATHEMATICAL MODELS, ANOMALIES, BIBLIOGRAPHIES (U)  
IDENTIFIERS: \*TECHNOLOGY FORECASTING (U)

The report reviews the state-of-the-art of Boundary Lubrication and presents the prospects of such improvements in the lubrication of highly-loaded bearings as virtually to eliminate bearing failures and of mathematical models which might explain the low wear observed. These models are shown to be inadequate and some steps are taken to complete them. It is shown that 27 out of the 28 anomalies are explained by the expanded models. A plan for applying this knowledge to design practices is outlined. (Author) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 746 297 6/16  
MIAMI UNIV OXFORD OHIO

Factors Affecting the Detection and  
Recognition of Colored Targets.

(U)

DESCRIPTIVE NOTE: Final technical rept. 1 Jul 70-15  
May 72.

MAY 72 227P White, Raymond M., Jr.;  
Dainoff, Marvin J.; Reynolds, Richard E. ;  
CONTRACT: F33615-70-C-1766

PROJ: AF-7183  
MONITOR: AMRL TR-72-38

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TARGET DISCRIMINATION, \*VISUAL  
PERCEPTION), (\*TARGET RECOGNITION, COLORS),  
PERFORMANCE(HUMAN). SIGNAL LIGHTS, FACTOR ANALYSIS,  
BACKGROUND, REACTION(PSYCHOLOGY), SELECTION, STATE-OF-  
THE-ART REVIEWS (U)  
IDENTIFIERS: STIMULUS(PSYCHOPHYSIOLOGY) (U)

The literature was reviewed in the areas of (a)  
effects of limited stimulus energy and background  
factors on the detection and recognition of colored  
signal lights; and (b) determining factors  
affecting observers' performance in absolute  
identification of target colors. Five experiments  
were conducted to determine the effects of two  
classes of variables on an observer's ability to  
quickly and accurately identify the reflected color  
of a target: background and reaction time.  
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 744 479 8/6  
CLEMSON UNIV S C DEPT OF CIVIL ENGINEERING

A State of the Art Survey of the Applications  
of Aerial Remote Sensing to Coastal  
Engineering.

(U)

MAY 72 195P Stafford, Donald B. ;  
CONTRACT: DACW72-70-C-0034

UNCLASSIFIED REPORT

DESCRIPTORS: (\*NATURAL RESOURCES, AERIAL  
RECONNAISSANCE), STATE-OF-THE-ART REVIEWS, AERIAL  
PHOTOGRAPHY, COLOR PHOTOGRAPHY, INFRARED PHOTOGRAPHY,  
PHOTOGRAMMETRY, MULTIBAND SPECTRAL RECONNAISSANCE,  
SPACEBORNE, COASTAL REGIONS, RADAR IMAGES, LASERS,  
METEOROLOGICAL SATELLITES, RADIOMETERS, FLUORIMETERS,  
BIBLIOGRAPHIES, ABSTRACTS (U)  
IDENTIFIERS: \*COASTAL ENGINEERING, \*REMOTE SENSING,  
SPACEBORNE PHOTOGRAPHY (U)

The report presents the results of a comprehensive  
survey of the applications of aerial remote sensing  
techniques in the field of coastal engineering.  
Part 1 presents a narrative summary of the state of  
the art of coastal engineering applications of aerial  
remote sensors. Existing and potential applications  
of the techniques are described. Important  
characteristics of the various aerial remote sensors  
and the limitations of the techniques in coastal  
engineering applications are discussed. The  
primary aerial remote sensors considered are black  
and white, black and white infrared, color, and color  
infrared aerial photographs, satellite photographs,  
infrared imagery, multispectral imagery, and radar  
imagery. Part 2 is an annotated bibliography  
describing the coastal engineering applications of  
aerial remote sensing techniques. This is a  
representative compilation of literature written over  
the past 30 years. A variety of coastal  
engineering applications of aerial remote sensors are  
described. Approximately 200 references are listed  
in the annotated bibliography. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 742 672 19/5

ARMY INFANTRY BOARD FORT BENNING GA

State of the Art Study Antitank Miss  
Distance Indication System,

(U)

DEC 71 51P James, Richard D. :Clark,

John J. ;

REPT. NO. : USAIB-3353

PROJ: USATECOM-9-CO-08F-000-001

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FIRE CONTROL SYSTEM COMPONENTS, STATE-OF-  
THE-ART REVIEWS). (\*ANTITANK AMMUNITION, MISS DISTANCE),  
CIRCULAR ERROR PROBABLE, ACOUSTIC DETECTORS, RADAR  
EQUIPMENT, INFRARED DETECTORS, FEASIBILITY STUDIES (U)

The study was conducted by the US Army Infantry  
Board (USAIB), Fort Benning, Georgia, to  
determine the most feasible approach to obtain the  
capability for measuring the miss distance and  
direction of antitank missiles fired in day, night  
and all weather conditions at stationary and moving  
targets. The study pertains to the feasibility of  
instrumentation design for subsonic antitank  
projectiles. It was directed on the basis that  
there is no available MDI system that provides X  
and Y coordinates under all conditions previously  
stated. The study was to determine the state-of-  
the-art of miss distance scoring in all services for  
all types of projectiles. By using this open  
approach all existing methods and their combinations  
were examined for possible solutions.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 739 422 15/5

ARMY MATERIEL COMMAND TEXARKANA TEX INTERN TRAINING  
CENTER

A Survey of the Presentation of Technical  
Data for Maintenance.

(U)

DESCRIPTIVE NOTE: Research rept.,

MAY 71 53P Kruvand, Daniel H. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Master's thesis.

DESCRIPTORS: (\*MAINTENANCE, HANDBOOKS), INSTRUCTION  
MANUALS, STATE-OF-THE-ART REVIEWS, DATA, PRINTING,  
MICROFILM, DISPLAY SYSTEMS, HUMAN FACTORS ENGINEERING,  
READING, MAINTENANCE PERSONNEL (U)  
IDENTIFIERS: RECOMMENDATIONS, INFORMATION SYSTEMS,  
TROUBLESHOOTING (U)

The paper presents the results of a survey  
conducted in the area of maintenance information  
communication. The structure of the conventional  
technical manual is described, as well as attempts to  
overcome its faults. The military maintenance  
technician and his environment are discussed to  
better explain the role of technical manuals in  
maintenance support. New concepts and techniques  
for presenting maintenance information are surveyed,  
and recommendations are made for future research in  
the area. (Author)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD- 739 265 11/6 20/12  
CONNECTICUT UNIV STORRS DEPT OF METALLURGY

Fracture Mechanics and Corrosion Fatigue. (U)

FEB 72 57P McEvily, Arthur J. ; Wei,  
Robert P. ;  
CONTRACT: F44620-69-C-0011  
PROJ: AF-9560  
MONITOR: AFCSR TR-72-0408

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with Lehigh Univ., Bethlehem, Pa. Dept. of Mechanical Engineering and Mechanics.

DESCRIPTORS: (\*FRACTURE(MECHANICS)), (\*STATE-OF-THE-ART REVIEWS), (\*CORROSION, \*FATIGUE(MECHANICS)), CRACK PROPAGATION, ALUMINUM ALLOYS, STEEL (U)  
IDENTIFIERS: CORROSION, FATIGUE(MECHANICS) (U)

The development and current state-of-the art in fracture mechanics in relation to studies of environment-enhanced fatigue-crack growth (corrosion fatigue) and fatigue-crack growth per se are reviewed. Patterns of response of materials to different loading and environmental conditions are considered in terms of the probable mechanisms of the environmental embrittlement. The usefulness of the fracture mechanics approach in developing understanding of the mechanisms for fatigue fracture and the engineering utility of this approach are discussed. Areas for additional research are also indicated. (Author) (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD- 738 204 13/11  
DYNAMIC SCIENCE ENGINEERING OPERATIONS PHOENIX ARIZ

Evaluation of Self-Sealing Breakaway Valves for Crashworthy Aircraft Fuel Systems. (U)

DESCRIPTIVE NOTE: Final rept.,  
NOV 71 75P Anson, Bruce ;  
REPT. NO. 4820-71-25  
CONTRACT: DAAJ02-70-C-0038, DAAJ02-67-C-0004  
PROJ: DA-1-F-164204-D-154  
MONITOR: USAAMRDL TR-71-65

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*VALVES, EXPERIMENTAL DESIGN), (\*AVIATION ACCIDENTS, FIRE SAFETY), STATE-OF-THE-ART REVIEWS, TEST METHODS, PROBLEM SOLVING, FACTOR ANALYSIS, CORRELATION TECHNIQUES, SPECIFICATIONS (U)

A program was aimed at improving the component performance characteristics of breakaway valves used to eliminate fuel spillage and subsequent fire in otherwise survivable aircraft crashes. It consisted of an initial study and literature survey to establish the state of the art followed by two series of static and dynam.c tests of various types of valves to define problem areas and to verify that the problems had been corrected. An analysis to correct the indicated deficiencies was accomplished between the two test phases. The results were then collated into a draft military specification. (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 737 694 1/3  
NORTH AMERICAN ROCKWELL CORP COLUMBUS OHIO COLUMBUS  
DIV

Study of Control Devices for Improved  
Tactical Agility.

(U)

DESCRIPTIVE NOTE: Final rept.,

AUG 71 327P Hanna, Richard H. ; Stewart,

Vearl R. ;

REPT. NO. : NR71H-317

CONTRACT: N00014-71-C-0062

PROJ: NR-212-202

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CONTROL SYSTEMS, STATE-OF-THE-ART  
REVIEWS), (\*JET FIGHTERS, FLIGHT CONTROL SYSTEMS),  
FLIGHT PATHS, RESPONSE, AERODYNAMIC CONTROL SURFACES,  
MANEUVERABILITY, ANGLE OF ATTACK, BIBLIOGRAPHIES,

(U)

IDENTIFIERS: EVALUATION

(U)

A study was conducted to determine the effect of the control device characteristics on airplane agility at transonic speeds. A list of over 600 reports containing data on various control devices is presented. A discussion of the more widely used control devices is presented together with data showing trends and general characteristics. From this list of control devices certain devices were selected for evaluation on a baseline configuration. An Agility Index was formulated for the evaluation of the selected control devices. The results of this portion of the study showed certain control devices than enhanced agility. A fighter aircraft was configured with the agility enhancement control devices, evaluated for agility and compared to the baseline airplane. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 736 871 5/2  
CALIFORNIA UNIV LOS ANGELES

Library Environmental Design: Physical  
Facilities and Equipment.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 70-31 Dec 71 on  
Phase 1.

DEC 71 267P Evans, G. Edward ; Iredale,

Ralph ; Kamnitzer, Peter ; Vreeland, Thomas ;

Anderson, Lemoyne ;

CONTRACT: DACA73-71-C-0001

PROJ: DA-2-P-062101-A-728

TASK: 2-P-062101-A-72802

MONITOR: TISA 33

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*LIBRARIES, DESIGN), STRUCTURAL  
PROPERTIES, STATE-OF-THE-ART REVIEWS, MANAGEMENT  
PLANNING AND CONTROL, ARMY

(U)

The state of the art report summarizes current practice and accepted standards in library physical facility design. It is intended to serve as an interim planning guide for Army technical libraries until the completion of the Guided Inquiry System in the second phase of this study. Recommendations made in the report are based on a thorough review of the literature on library planning and design, an analysis of the present Army procedures for obtaining library facilities, interviews with librarians, building consultants and architects, and site visits to a number of different types of military and non-military libraries. The report concludes that a generic base exists from which to plan all libraries and makes specific recommendations to improve the procedures for providing Army technical libraries. (Author)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 736 822 9/2  
 GTE SYLVANIA INC NEEDHAM HEIGHTS MASS ELECTRONIC SYSTEMS  
 GROUP

A Study of Solid State Bulk Memory  
 Storage Techniques. (U)

DESCRIPTIVE NOTE: Final technical rept. 29 Jun 70-29

Jun 71, 71 199P Abbott, Matthew C.; Powicki,  
 Henry R.; Dillon, Clay J.;  
 CONTRACT: F30602-70-C-0261  
 MONITOR: RADC TR-71-273

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*MEMORY DEVICES, STATE-OF-THE-ART  
 REVIEWS). (\*DATA STORAGE SYSTEMS, MILITARY  
 REQUIREMENTS). THIN FILM STORAGE DEVICES. CORE STORAGE,  
 MAGNETIC CORES, CRYOGENIC STORAGE DEVICES, SHIFT  
 REGISTERS, SEMICONDUCTOR DEVICES. INTEGRATED CIRCUITS,  
 OPTICAL EQUIPMENT. MAGNETIC MATERIALS, RELIABILITY,  
 PERFORMANCE (ENGINEERING), COSTS  
 IDENTIFIERS: LARGE SCALE INTEGRATED CIRCUITS, MAGNETIC  
 BUBBLE DOMAINS, MAGNETIC FILM MEMORIES, OPTICAL  
 STORAGE DEVICES, RANDOM ACCESS COMPUTER STORAGE,  
 SEMICONDUCTOR COMPUTER STORAGE, HOLOGRAPHIC  
 INFORMATION STORAGE (U)

The report describes a study to determine which  
 solid state memory technique is most promising for  
 use in building a reasonably-priced, ruggedized,  
 random access, 1 billion-bit mass memory. Those  
 techniques currently under development were  
 identified. These included LSI, beam accessed,  
 magnetic shift register, ferroacoustic, and array  
 memory techniques. A thorough search of the  
 literature was conducted, and a memory system model  
 was constructed for each technique that showed  
 suitability for use in a mass memory. Six models  
 were constructed: bubble, Soniscan, optical,  
 DOT, LSI, and oligatomic. The models were  
 rated and compared, indicating that the magnetic  
 bubble technique was likely to prove the most  
 satisfactory. A five-year research and development  
 plan was generated to indicate the steps required to  
 reach the goal of a militarized 1 billion-bit  
 random-access memory using the magnetic bubble  
 technique. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 736 238 5/9  
 SINGER-GENERAL PRECISION INC BINGHAMTON N Y LINK DIV

Study of Advanced Vehicle Simulation  
 Techniques. (U)

DESCRIPTIVE NOTE: Final rept. Jul 70-Apr 71,  
 OCT 71 419P Collier, A. F.; Peters, D.;

Simpson, R. G.;  
 CONTRACT: N61339-70-C-0312  
 PROJ: NAVTRADEVEN-7883-24  
 MONITOR: NAVTRADEVEN 70-C-0312-1

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*SIMULATORS, \*TRAINING DEVICES),  
 (\*VEHICLES, SIMULATORS), VISUAL SIGNALS, STATE-OF-THE-  
 ART REVIEWS, HYDROFOIL CRAFT, GROUND EFFECT MACHINES,  
 AMPHIBIOUS VEHICLES, TANKS (COMBAT VEHICLES) (U)  
 IDENTIFIERS: LVTP-7 VEHICLES, MBT-70 TANKS, PC(H)-1  
 HYDROFOIL CRAFT, SKMR-1 VEHICLES (U)

The report presents the results of a study to  
 determine the feasibility of developing a visual  
 simulation system for meeting the training  
 requirements for operators of a variety of surface  
 vehicles. The vehicles considered were a tank  
 (MBT-70), an air cushion vehicle (SKMR-1), a  
 hydrofoil (PC(H)-1) and an amphibious assault  
 personnel carrier (LVTP-7). Included in the  
 report is an analysis of the visual system  
 requirements for these vehicles, a state-of-the-art  
 investigation of visual system techniques, and the  
 formulation of a recommended visual system. The  
 recommended system combines a camera model approach  
 for generating land scene with a scanned transparency  
 approach for generating waves, the latter being inset  
 into the land imagery. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 736 017

14/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE  
STATION TENNEvaluation of Probes for Measuring Static  
Pressure in Supersonic and Hypersonic Flows. (U)

DESCRIPTIVE NOTE: Final rept. Jul-Oct 70,

JAN 72 43P

REPT. NO. AEDC-TR-71-265

CONTRACT: F40600-72-C-0003

PROJ: AF-8219, ARO-VT0036

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,  
Inc., Tallahoma, Tenn., Rept. no. ARO-VKF-TR-  
71-212.DESCRIPTORS: (\*WIND TUNNELS, \*PROBES), AERODYNAMIC  
CHARACTERISTICS, STATE-OF-THE-ART REVIEWS, PRESSURE  
GAGES, SLENDER BODIES, CONICAL BODIES, DISKS, ANGLE OF  
ATTACK, ORIFICES, ACCURACY, VISCOSITY, CORRECTIONS,  
INTERFERENCE (U)

IDENTIFIERS: EVALUATION (U)

Pertinent facts in the literature have been examined regarding the aerodynamic characteristics of static-pressure measuring probes in order to assess the relative merits and limitations of cone-cylinder, sharp-cone, and planar (disk) probes. The effects of Mach number, angle of attack, orifice location, and Reynolds number on the inferred local pressures were all evaluated at Mach numbers up to 8. It is concluded that the planar probe and sharp-cone probe (if properly designed) are equally more accurate than the cone-cylinder probe at supersonic and hypersonic speeds. However, the cone-cylinder is judged to be superior for use at Mach numbers below 4. Details of a recommended procedure to correct for the effects of viscous interaction (all probes) and angle of attack (planar probes only) are included. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 735 758

17/2

CARNEGIE-MELLON UNIV PITTSBURGH PA DEPT OF COMPUTER  
SCIENCE

Speech-Understanding Systems. (U)

DESCRIPTIVE NOTE: Final rept.,

MAY 71 146P

FORGIE, J.; GREEN, C.; KILATT, D.;

CONTRACT: F44620-70-C-0107

PROJ: AF-A0827-5

MONITOR: AFOSR TR-72-0142

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*SPEECH, ANALYSIS), PHONETICS, STATE-OF-THE-ART REVIEWS, INSTRUMENTATION, SPEECH RECOGNITION, SCIENTIFIC RESEARCH (U)

The report provides an evaluation of the state of the art and a program for research towards the development of speech understanding systems. To assess the possibility of such systems four specific tasks were considered and evaluated. Problem areas are identified and discussed leading to the conclusions on the technical aspects of the study. A possible program for research and development is presented. (Author) (U)



## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 734 648 14/2  
NAVAL ORDNANCE LAB WHITE OAK MDEvaluation of Two Types of Facilities to  
Fulfill the Need for High Reynolds Number  
Transonic Testing.

JUL 71 248P Enkenhus, Kurt R. ; Merritt,

David L. ;

REPT. NO. NOLTR-71-147

PROJ: ONR-PO-1-0109, RR009-02-01

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*TRANSONIC WIND TUNNELS, STATE-OF-THE-ART  
REVIEWS), NAVAL RESEARCH, DESIGN, COSTS. (U)  
PERFORMANCE(ENGINEERING), CORRELATION TECHNIQUES (U)  
IDENTIFIERS: LUDWIG TUBES, BLOWDOWN TUNNELS (U)

The Navy's need for high Reynolds number transonic testing is reviewed and some specific problem areas in weapon and aircraft design are cited. The abilities of currently available wind tunnels in the United States to meet those needs are assessed and the Ludwig tube wind tunnel at NASA Marshall is evaluated. The theory of the Ludwig tube is discussed and tables and charts of the parameters are presented. A second option to meet the high Reynolds number testing of a conventional blowdown tunnel. The costs of the two types of facilities are compared for Navy weapons and flight vehicles at subsonic, transonic and low supersonic speeds.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 734 247 9/2  
ROME AIR DEVELOPMENT CENTER GRIFFISS AFB N YCRT Graphics Consoles - An Aid to  
Selection.

DESCRIPTIVE NOTE: Technical rept.,

NOV 71 85P Jacobs, Lesley D. ;

REPT. NO. RADC-TR-71-61

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*CATHODE RAY TUBE SCREENS, STATE-OF-THE-ART  
REVIEWS), (\*DATA PROCESSING SYSTEMS, GRAPHICS),  
DIGITAL COMPUTERS, DATA TRANSMISSION SYSTEMS, TELEVISION  
DISPLAY SYSTEMS, INPUT-OUTPUT DEVICES, OPERATION (U)  
IDENTIFIERS: LIGHT PENS, \*COMPUTER GRAPHICS (U)

Computer driven, on-line, cathode ray tube devices i.e. CRT graphics consoles, have only recently made the transition from the 'research and development stage' to the user-oriented environment. The wide range and variety of consoles, costs, capabilities, and performance require that the console buyer intelligently and discriminatingly select the display and features which best meet his requirements for the least overall cost. To assist in the selection of such a console is the purpose of this report. Included in the report is information which will explain the technology-the 'how and why'-behind graphic CRT displays, describe basic display capabilities, terminology, functions and relative merit and comparatively discuss display techniques and devices. Finally, a current listing (as of 1 Oct 70) of specific displays, capabilities and costs is provided. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 733 583 20/4 19/1  
NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER BETHESDA  
MD

Location of Separation on a Circular Cylinder  
in Crossflow as a Function of Reynolds  
Number,

(U)

NOV 71 29P  
REPT. NO. NSRDC-3647  
PROJ: S4611-010  
TASK: 11098  
Corder, David M. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CYLINDRICAL BODIES, \*FLOW SEPARATION),  
(\*UNDERWATER PROJECTILES, HYDRODYNAMICS), EXPERIMENTAL  
DATA, STATE-OF-THE-ART REVIEWS, THEORY, LAMINAR BOUNDARY  
LAYER, NUMERICAL METHODS AND PROCEDURES, EQUATIONS OF  
MOTION  
IDENTIFIERS: CROSS FLOW  
(U)  
(U)

All available information on the location of  
separation on a circular cylinder in crossflow as a  
function of Reynolds number, from creeping flow to  
transcritical flow, has been summarized. The  
results of an experiment by the author in the  
transition or supercritical flow regime are included.  
The various theoretical and experimental results  
are discussed and compared. Areas needing  
additional theoretical and experimental work are  
pointed out.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 732 934 5/1  
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF  
ENGINEERING

A Critical Review and Comparative Analysis  
of Definitions, Concepts, and State of the  
Art in Literature Regarding Systems  
Management.

(U)

DESCRIPTIVE NOTE: Master's thesis,  
SEP 71 89P Williams, Roger L. ;  
REPT. NO. GSW/SM/71-14

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SYSTEMS ENGINEERING, REVIEWS),  
(\*MANAGEMENT CONTROL SYSTEMS, SYSTEMS ENGINEERING),  
STATE-OF-THE-ART REVIEWS, HISTORY, MANAGEMENT PLANNING,  
DECISION MAKING, ADVANCED PLANNING, BIBLIOGRAPHIES,  
THESES  
IDENTIFIERS: \*MANAGEMENT BY EXCEPTION, \*MANAGEMENT  
INFORMATION SYSTEMS, \*MANAGEMENT METHODS, \*PROGRAM  
MANAGEMENT, \*SYSTEMS MANAGEMENT  
(U)  
(U)

In the last two decades the concept of systems  
management has been broadly applied and frequently  
treated in management literature. The rapid growth  
and expansion of the systems management concept has  
resulted in conflict and contradiction concerning its  
terminology, status, application, and philosophy.  
In view of this apparent conflict and  
contradiction, this research study was undertaken to  
develop and present a comprehensive review and  
comparative analysis of the literature concerning the  
systems management concept. The principle  
methodology applied was a review and critical  
comparison of secondary source data obtained mainly  
from libraries and correspondence with professional  
journals and associations. The definitions of a  
system and the systems approach were studied and  
compared as they appeared in the literature. Next  
the relationship of the systems approach and  
management was examined and the systems management  
concept viewed through its ancestry, present  
applications, and its future importance.  
(Author)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 732 794 13/3 13/10  
 SANTA FE-POWERDY INC SAN FRANCISCO CALIF ENGINEERING  
 DIV

Study of Construction Methods for Large  
 Undersea Concrete Structures.

(U)

DESCRIPTIVE NOTE: Final rept. 22 Mar-9 Sep 71,  
 SEP 71 103P Gerwick, Ben C., Jr.:  
 Talbot, W. J., Jr.; Chow, P. Y.; Brown, A.  
 L.; Brauner, H. A.;  
 CONTRACT: N62399-71-C-0015  
 MONITOR: NCEL CR-72.002

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*CONSTRUCTION, STATE-OF-THE-ART REVIEWS),  
 (-CONCRETE, UNDERWATER STRUCTURE), OCEAN BOTTOM, SITE  
 SELECTION, DEEP WATER, DESIGN, MIXTURES, HANDLING (U)

The study was undertaken to annotate up-to-date capability of the construction industry to replace those structures on the seabed. In equating this capability to the requirement, several methods and combinations of systems were evident, predicated on the final site selection for the emplacement. Each offshore site has a different set of geographical conditions that should be evaluated prior to designing and selecting any one method for construction. The report considers these variables in water depths up to 1000 feet deep. In evaluating design and construction methods for even larger objects and at depths up to 3000 feet, additional unknowns were indicated by the research. From this research and analysis several future study areas were suggested. Concepts involving underwater mixing and placing of concrete were reviewed along with various justifications for such developments. Recommendations and items for future research are also included in the report.

(U)

(Author)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 732 490 6/5  
 GEORGE WASHINGTON UNIV WASHINGTON D C BIOLOGICAL SCIENCES  
 COMMUNICATION PROJECT

Review of Publications and Support of  
 Research in Cryopreservation of Blood 1949-  
 1958.

(U)

71 82P Turner, Arthur R.;  
 CONTRACT: N00014-67-A-0214-0008

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-723 231.

DESCRIPTORS: (\*BLOOD, FREEZING), CRYOGENICS, STATE-OF-THE-ART REVIEWS, RESEARCH PROGRAM ADMINISTRATION, PRESERVATION, BIBLIOGRAPHIES, HUMANS, ANIMALS, BLOOD CELLS (U)

The document is concerned with the preservation of the blood cells of humans and animals at cryogenic temperatures. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 732 241 20/12 20/3  
CALIFORNIA UNIV SAN DIEGO LA JOLLA DEPT OF PHYSICSHigh Temperature Superconductors--An  
Empirical Approach to Superconductivity. (U)

DESCRIPTIVE NOTE: Final rept.;

OCT 71 22P Matthias, Bernd T. ;

CONTRACT: AF-AFOSR-631-67

PROJ: AF-9764

TASK: 976401

MONITOR: AFOSR TR-71-2324

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SUPERCONDUCTORS, TRANSITION TEMPERATURE),  
STATE-OF-THE-ART REVIEWS, MAGNETIC FIELDS,  
FERROELECTRICITY, ATOMIC ENERGY LEVELS, CRYSTAL  
STRUCTURE (U)  
IDENTIFIERS: CRITICAL FIELD (U)

The superconducting transition temperature has been raised to 21 degrees K, the critical magnetic field to 415 kilogauss. Twelve new superconducting elements have been discovered, one third of all those known. Ferroelectricity and lattice instabilities have been found as a major obstacle to much higher transition temperatures. Two entirely new groups of superconducting compounds have been discovered. F-electron superconductivity has been detected making lanthanum superconducting above 12 degrees K, the highest of all elements. Two new theories have been published. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 731 996 13/10 20/4  
NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER BETHESDA  
MDEstimating the Wind Resistance of Cargo  
Ships and Ships and Tankers. (U)

DESCRIPTIVE NOTE: Final rept.;

MAY 70 33P Wilson, Charles J. ; Roddy,

Robert F., Jr.;

REPT. NO. NSRDC-3355

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CARGO SHIPS, DRAG), WIND, MODEL TESTS,  
SHIP MODELS, STATE-OF-THE-ART REVIEWS,  
APPROXIMATION(MATHEMATICS), VELOCITY, TANKERS (U)  
IDENTIFIERS: \*SHIP DESIGN (U)

A study was made of the wind resistance of current merchant ships designs, based on available experimental results. Various methods of estimating wind resistance were evaluated. A proposed method which allows for natural wind gradients appears promising but needs more experimental data. A method based on current practice at the Naval Ship Research and Development Center is recommended for interim use. Model full-scale powering correlation studies were made using the recommended method. A change in the correlation allowance presently in use is discussed. (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 731 774 5/11 5/3  
KALTER (ROBERT J) ITHACA N Y

The Economics of Water-Based Outdoor Recreation: A Survey and Critique of Recent Developments.

(U)

DESCRIPTIVE NOTE: Final rept.,  
MAR 71 205p Kalter, Robert J. ;  
CONTRACT: DACW31-71-C-0039  
MONITOR: IWR 71-8

## UNCLASSIFIED REPORT

DESCRIPTORS: (=RECREATION, ECONOMICS), (=MANAGEMENT PLANNING, RECREATION), STATE-OF-THE-ART REVIEWS, NATURAL RESOURCES, SOCIOECONOMICS, STATISTICAL DATA, IMPACT, PREDICTIONS, ANALYSIS (U)  
IDENTIFIERS: BENEFIT COST ANALYSIS, REGIONAL PLANNING (U)

The report is a survey and critique of the literature and practice of estimating use of and benefits from outdoor recreation for the purpose of determining the direction of further research efforts by the Corps of Engineers. The report outlines the conceptual and empirical difficulties associated with the various methodologies in use and suggests promising approaches to improved analysis within the framework of multiple objectives of water resources development.

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 731 708 13/13  
FOUNDATION SCIENCES INC PORTLAND OREG

Review and Critical Analysis of the State-of-the-Art in Underground Works Construction.

(U)

DESCRIPTIVE NOTE: Semiannual technical rept. Feb-Aug 71,  
SEP 71 145P Dodds, Donald J. ;  
CONTRACT: HO210035  
PROJ: ARPA-1F10

## UNCLASSIFIED REPORT

DESCRIPTORS: (=UNDERGROUND STRUCTURES, STATE-OF-THE-ART REVIEWS), STATISTICAL ANALYSIS, TABLES, COMPUTER PROGRAMS, FOUNDATIONS(STRUCTURES), COSTS, QUESTIONNAIRES, OREGON, WASHINGTON(STATE) (U)  
IDENTIFIERS: TUNNELS (U)

Foundation Sciences, Inc. is determining the feasibility of collecting information on the construction of underground works, especially those of the last twenty years. The gathering and quantizing of this type of information is being performed for the Oregon and Washington areas as a pilot project. The first phase of the study is the collection of as much of the data as available about the geology, design, construction and performance of existing underground rock excavations and the tabulation of this knowledge for a data bank. To date, all information contained in the 'general data' forms for 256 projects have been entered into the computer. Four general computer programs are employed to obtain accurate answers to specific inquiries and report writing demands. The Inquire and Print program is the only program necessary for the data user and is available to all terminal users at any location in the United States. Detailed operating instructions are included for this program plus a brief discussion of three other programs used to enter the information into the computer. The second phase of the study is the evaluation of data available with special reference to those items of design and construction affecting supports. Two projects have been selected for intensive study. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 731 593 20/5  
MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF MECHANICAL  
ENGINEERING

Excitation of Gases Using Wavelength-  
Tunable Lasers. (U)

71 50P Dewey, C. Forbes, Jr.;  
CONTRACT: N00014-67-A-0204-0040

UNCLASSIFIED REPORT  
Availability: Pub. in Modern Optical Methods in  
Gas Dynamic Research, p221-233 1971.

DESCRIPTORS: (\*LASERS, STATE-OF-THE-ART REVIEWS), GAS  
LASERS, IRASERS, COHERENT RADIATION, PUMPING(OPTICAL),  
FREQUENCY MULTIPLIERS, TUNING DEVICES, ATOMIC ENERGY  
LEVELS, ELECTRON TRANSITIONS (U)  
IDENTIFIERS: LIQUID LASERS, NONLINEAR OPTICS, ORGANIC  
DYE LASERS, SEMICONDUCTOR LASERS, \*GAS DYNAMICS,  
INJECTION LASERS, TUNABLE LASERS (U)

Recent developments in liquid dye lasers,  
semiconductor lasers, and nonlinear optical  
techniques have made possible the production of high-  
intensity monochromatic radiation at wavelengths  
ranging from the near ultraviolet to the far  
infrared. Wavelength tuning opens an entirely new  
dimension in the spectroscopy and resonant excitation  
of gases. This paper reviews the state-of-the-art  
in wavelength-tunable lasers. A number of  
applications are also discussed, including selective  
excitation spectroscopy, plasma ionization  
enhancement, and velocity determinations in high-  
speed gas flow. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 731 493 1/3  
LOCKHEED-CALIFORNIA CO BURBANK

Advanced Anti-Torque Concepts Study. (U)

DESCRIPTIVE NOTE: Final rept.,  
AUG 71 232P Velazquez, J. L. ;  
REPT. NO. LR-24295  
CONTRACT: DAAJ02-70-C-0043  
PROJ: DA-1-F-162203-A-143  
MONITOR: USAAMRDL TR-71-44

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ANTITORQUE MOTORS, DESIGN), TAIL  
HELICOPTER MOTORS, CONFIGURATION, OPTIMIZATION, ROTARY  
WINGS, ROTOR BLADES(ROTARY WINGS), DUCTED FANS, PATENTS,  
STATE-OF-THE-ART REVIEWS, SHROUDED PROPELLERS,  
CONVERTIBLE PLANES (U)

A design study has been conducted by the  
Lockheed-California Company on advanced  
antitorque concepts intended to replace tail rotors  
on conventional single-main-rotor/tail-rotor  
helicopters. The principal design objectives were  
to reduce hazard to ground personnel and to reduce  
vulnerability of helicopters to terrain-contact  
damage. Secondary objectives were reduced  
vulnerability to small-arms fire and improvements in  
dynamic reliability, maintainability and noise  
characteristics. Two systems were selected from a  
broad literature search and subsequent design  
studies. The first concept is based on a main-  
rotor-driven axial flow fan internally mounted in the  
aft fuselage delivering air under pressure to a  
variable geometry louvered exit for antitorque and/or  
forward-flight propulsion thrust. The second  
concept employs a main-rotor-driven ducted fan  
installed in a central pylon supporting a twin-fin  
empennage. Results of preliminary design studies  
applying these concepts to an existing Lockheed  
Model 286 helicopter are presented in this report,  
including performance and weight data.  
Improvements over the research vehicle that could  
result from applying these concepts to a totally new  
vehicle, using current state-of-the-art design  
technology, are also discussed. (Author) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 730 179 13/12 1/2  
 FEDERAL AVIATION ADMINISTRATION WASHINGTON D C FLIGHT  
 STANDARDS SERVICE

Aircraft Fire Detection: Report of  
 Conference Held in Washington, D. C., on  
 16-17 November 1970.

71 210P

UNCLASSIFIED REPORT

(U)

DESCRIPTORS: (=AIRCRAFT FIRES, SYMPOSIA), (=FIRE ALARM  
 SYSTEMS, AIRBORNE), DETECTION, VERTICAL TAKE-OFF PLANES,  
 SMOKE, HELICOPTERS, STATE-OF-THE-ART REVIEWS, NAVAL  
 AIRCRAFT, AIR FORCE OPERATIONS, FIRE SAFETY (U)

A symposium on aircraft fire detector systems was  
 held to familiarize Federal Aviation  
 Administration Regional personnel with the  
 characteristics, capabilities, and limitations of the  
 currently available detector systems. A number of  
 presentations were made by representatives of leading  
 fire detector, helicopter, and small airplane  
 manufacturers, and by representatives of the military  
 and the FAA National Aviation Facilities  
 Experimental Center. All aspects of aircraft  
 fire detection were reviewed. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 729 697 9/3 20/12

RESEARCH ADVISORY INST NEWPORT BEACH CALIF

Device Applications of Cryogenics. Part I.  
 Superconducting Electronics.

(U)

DESCRIPTIVE NOTE: Final rept. on phase 1,  
 JUL 71 360P Clarke, John ; Dick, George  
 J. ; Langenberg, Donald N. ; Little, William A. ;  
 Mercereau, James E. ;  
 REPT. NO. RAI-100  
 CONTRACT: N00014-70-C-0133  
 PROJ: NR-274-110, RFO18-02-06

UNCLASSIFIED REPORT

DESCRIPTORS: (=ELECTRONIC EQUIPMENT,  
 \*SUPERCONDUCTIVITY), SUPERCONDUCTORS, CRYOGENICS,  
 GALVANOMETERS, VOLTMETERS, MAGNETOMETERS, TRANSFORMERS,  
 RESONATORS, TRANSMISSION LINES, SOLOMETERS,  
 SEMICONDUCTOR DEVICES, INTERFEROMETERS, STANDARDS,  
 REFRIGERATION SYSTEMS, STATE-OF-THE-ART REVIEWS (U)  
 IDENTIFIERS: METROLOGY, JOSEPHSON JUNCTIONS,  
 CRYOTRONS (U)

The purpose of this study is to present a brief  
 review of the physics of the low temperature  
 phenomenon, superconductivity; to describe the  
 characteristics, technology, and capabilities of  
 electronic devices based on the unusual properties of  
 superconductors; and to indicate some of the ways in  
 which these devices may be applied to the solution of  
 important technological problems. The report also  
 contains a review of the present state of the art of  
 small refrigeration systems applicable to  
 superconducting electronic systems, and discusses the  
 prospects for development of superconducting  
 materials with higher transition temperatures and  
 critical fields. Specific recommendations are made  
 for areas of possible Navy applications of this new  
 electronic technology as well as areas in which  
 further research and development seem appropriate in  
 order to determine Navy use. (Author) (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 729 130 5/2  
CALIFORNIA UNIV DAVIS DEPT OF HUMAN PHYSIOLOGYInformation Support Systems for Experimental  
Investigation. (U)DEC 69 15P Walters, R. F. ; Roth, F. ;  
Renoud, C. R. G. ; Brin, K. P. ; Morrison, J.  
T. ;

CONTRACT: AF-AFOSR-1659-69, NGL-05-004-031

PROJ: AF-9777

MONITOR: AFOSR

TR-71-2320

## UNCLASSIFIED REPORT

Availability: Pub. in Comput. Biol. Med., v1  
p75-86 1970.SUPPLEMENTARY NOTE: Prepared in cooperation with New  
York Univ., School of Medicine, N.Y.DESCRIPTORS: (\*DATA PROCESSING SYSTEMS, SCIENTIFIC  
RESEARCH). STATE-OF-THE-ART REVIEWS, INDEXES,  
INFORMATION RETRIEVAL, MEDICAL RESEARCH,  
PERFORMANCE(HUMAN), PHYSIOLOGY (U)

The report describes a coordinated Information Support System which is designed to reduce time lags in providing an experimental researcher with essential data during the various phases of his investigations. The system includes an indexing approach for detailed categorization of pertinent references, a microfiche file of original references, a data bank that can be selectively retrieved and various programs that facilitate input and conversion of data. The Information Support System, when coupled with other on-line interactive programs for simulation and data comparison and analysis, provides a powerful tool which has already benefited physiological studies of human performance. (U)

(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 728 292 20/11 13/13  
FRANKLIN INST RESEARCH LABS PHILADELPHIA PAA Study of Pre-Crack Fatigue. Part  
I. (U)DESCRIPTIVE NOTE: Final technical rept.,  
MAY 71 94P Zisfein, Melvin B. ;

REPT. NO. F1RL-F-C2231-2

CONTRACT: F44620-68-C-0068

PROJ: AF-9782

TASK: 978202

MONITOR: AFOSR

TR-71-1802

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-722 854.

DESCRIPTORS: (\*FATIGUE(MECHANICS), MATERIALS),  
(\*STRUCTURAL PARTS, FATIGUE(MECHANICS)), STATE-OF-THE-  
ART REVIEWS, NON-DESTRUCTIVE TESTING, DAMAGE,  
FRACTURE(MECHANICS), STRUCTURAL PROPERTIES, THEORY  
IDENTIFIERS: \*THRAUSTICS (U)

The report is an examination of current technological posture in materials fatigue, especially that area of fatigue before the formation of a finite or 'technical' crack. A computerized search of the literature was performed by the Defense Documentation Center leading to the establishment of a bibliography which was intensively examined. The various concepts and rules of fatigue damage were critically examined as were their effects on fatigue analysis. The fatigue implications of Non-Destructive Evaluation (NDE) were also reviewed with the objective of recommending new approaches. Throughout all, a number of specific recommendations for future activity were made and discussed. These are summarized at the conclusion of this report. (U)

(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 728 224 9/2  
COMPUTER RESEARCH CORP NEWTON MASS  
Interactive Programming Systems and Languages. (U)

DESCRIPTIVE NOTE: Final rept.,  
JUL 71 114P Clapp, Lewis :  
CONTRACT: F4620-67-C-0015  
PROJ: AF-9769  
MONITOR: AFOSR TR-71-2159

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DATA PROCESSING SYSTEMS, \*TIME SHARING),  
(\*PROGRAMMING LANGUAGES, TIME SHARING),  
PROGRAMMING (COMPUTERS), ANALOG-DIGITAL COMPUTERS, INPUT-  
OUTPUT DEVICES, INTERFACES, COMPUTER LOGIC, COMPILERS,  
ARTIFICIAL INTELLIGENCE, NUMERICAL ANALYSIS, STATE-OF-  
THE-ART REVIEWS (U)

IDENTIFIERS: MULTIPROGRAMMING, ON LINE COMPUTERS,  
CENTRAL PROCESSING UNITS, COMPUTER AIDED DESIGN,  
COMPUTER GRAPHICS, DATA PROCESSING TERMINALS (U)

In an attempt to shed some light on this dynamic new field of time sharing applications, the author has prepared this survey on the state of the art in on-line systems. It is our purpose to help the reader become aware of the important potential of on-line systems, especially as it affects his own areas of specialization and endeavor. In a small way, one hopes to encourage progress in advanced applications of on-line systems by indicating to those developers of new systems what work has gone on before, so that they may build upon this rather than be forced to reinvent the wheel. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 727 728 11/3 1/5  
DOW CHEMICAL CO MIDLAND MICH  
Latex Modification of Fast-Fix C-1 Cement for the Rapid Repair of Bomb-Damaged Runways. (U)

DESCRIPTIVE NOTE: Final rept. 16 Apr 70-12 May 71,  
MAY 71 203P Eash, R. Douglas ; Hart, G.  
M. :  
CONTRACT: DACA39-70-C-0022  
MONITOR: AEWES CR-C-71-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CEMENTS, RUNWAYS), (\*RUNWAYS, MAINTENANCE), ADDITIVES, PAVEMENTS, DAMAGE, PLASTICS, STATE-OF-THE-ART REVIEWS (U)  
IDENTIFIERS: LATEX (U)

The report consists, essentially, of two parts: a state-of-the-art review and laboratory testing of the effects of adding two Dow polymeric latexes to Fast-Fix C-1. The state-of-the-art review covers several basic studies in which many materials, both organic and inorganic, were investigated. The study was then focused on the study of fast-setting inorganic cements and methods to obtain high strength concrete, silicate concrete, and cementitious ceramic materials, are also covered. The state-of-the-art review also has a section indicating areas in which fast-setting cements can serve and the requirements placed on this service. Topics covered are runway design, pavement requirements, pavement evaluation, surface repair, and cold weather construction. In the lab study, two polymeric latexes, Dow Latex 460 and Dow Latex 464, were incorporated at selected concentrations in Fast-Fix C-1 mortars. Tests were conducted to determine freeze-thaw durability, tensile strength, compressive strength, flexural strength, and shear bond. All latex concentrations improved bond strength and freeze-thaw durability and decreased 24-hour water absorption. All concentrations tended to retard set and early strength gain. Low concentrations (4%) of Latex 464 produced a modest improvement in compressive and flexural strengths, but no change in the elastic modulus. (Author) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 726 097 20/4

TORONTO UNIV (ONTARIO) INST FOR AEROSPACE STUDIES

The Transfer of Mass, Momentum and Energy  
in Free-Particle and Transition Flow  
Systems.

(U)

DESCRIPTIVE NOTE: Final report.

JAN 71 247P Patterson, Gordon N. ;

CONTRACT: AF-AFOSR-1481-68

PROJ: AF-9783

TASK: 978301

MONITOR: AFOSR TR-71-1165

UNCLASSIFIED REPORT

DESCRIPTORS: (\*RAREFIED GAS DYNAMICS, KINETIC THEORY).  
SATELLITES(ARTIFICIAL), STATE-OF-THE-ART REVIEWS, MASS  
TRANSFER, MOMENTUM, ENERGY, MATHEMATICAL MODELS,  
COMPUTER PROGRAMMING, THEORY, MOLECULAR PROPERTIES,  
CANADA

(U)

IDENTIFIERS: FREE MOLECULE FLOW, TRANSITION FLOW

(U)

A final report is made on the transfer of mass, momentum and energy in free-particle and transaction flow systems. It includes a state-of-the-art survey of the kinetic theory of gas flows based on reviews of basic background information. The report describes a study in the free particle regime in the hyperthermal free-molecule flow with application to satellite drag. Schramberg's reflection model is applied in the calculation of drag coefficients for convex bodies in free molecule flows and of the torque exerted on the Explorer 6 satellite. The same reflection model is also used for the calculation of the molecular transmission probability for conical tubes in hyperthermal free molecule flow. An experimental electron beam study of diffusive separation in transition-flow aerodynamic situations is noted. A method based on the studies has been developed to determine the ambient temperature and density of the major components of the upper atmosphere. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 725 617 13/2

ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISS

Investigation of Sinking Methods for Removal  
of Oil Pollution from Water Surfaces.  
Phase I: Survey of the State-of-the-  
Art.

(U)

FEB 71 70P

Houston, B. J. ;

CONTRACT: DOT-CG-00583-B

PROJ: CG-704110

MONITOR: USCG 704110/A/001-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*WATER POLLUTION, OILS).  
(-ABSORPTION(PHYSICAL), -OILS), STATE-OF-THE-ART  
REVIEWS, REMOVAL, CARBONATES, SULFATES, ASBESTOS, SAND,  
TOXICITY

(U)

IDENTIFIERS: \*OILS, \*POLLUTION, OILS, POLLUTION,  
REMOVAL, BARITE, CALCIUM CARBONATES, FLY ASH

(U)

The objective of the program was to investigate materials that can be utilized in the cleanup of massive oil spills by sinking the oil. Articles and publications were reviewed to locate and develop information on sinking absorbers. Literature pertaining to sinking absorbers was not abundant and most of the work that has been done was done in Europe, especially in England. It is believed, however, that practically all information of any value pertaining to sinking absorbers was located and processed. Eighteen materials offered by manufacturers have been located for investigation as sinking absorbers: one latex treated barite, one treated chalk, five expansive clays, three talcs (treated and untreated), three asbestos materials (treated and untreated), three treated snads, and two treated fly ashes. Based on results of the literature survey and on information supplied by the manufacturers, the 18 materials are assessed and rated herein with regard to effectiveness in absorbing and sinking oil, effectiveness in retaining oil, availability and cost of the material, hazards to personnel and plant and animal life, and difficulty of application. It is emphasized that the assessments and ratings are tentative, based on current knowledge of the materials, and thus may change drastically as more information is gathered.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 724 185 1/3 1/1  
BOEING CO PHILADELPHIA PA VERTOL DIVSTOL High-Lift Design Study, Volume I.  
State-of-the-Art Review of STOL Aerodynamic  
Technology. (U)DESCRIPTIVE NOTE: Final rept. Jan-Dec 70,  
APR 71 205P May, Fred ; Widdison, Colin

A. ;

REPT. NO. D210-10201-1

CONTRACT: F33615-70-C-1277

MONITOR: AFFDL TR-71-26-Vol-1

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-724 186.

DESCRIPTORS: (\*SHORT TAKEOFF AIRCRAFT, \*AERODYNAMICS),  
STATE-OF-THE-ART REVIEWS, LIFT, DESIGN, FLAPS (CONTROL  
SURFACES), PITCH (MOTION), PROPULSION SYSTEMS,  
MATHEMATICAL PREDICTION (U)  
IDENTIFIERS: SLIPSTREAM (U)

The state of the art of STOL aerodynamic technology for selected lift/propulsion concepts was surveyed to identify the available test data and prediction methods in the literature. The report consists of two volumes. In Volume I important areas of technology and information necessary for the evaluation of STOL aircraft aerodynamics are listed; the aerodynamic test data and prediction methodology relevant to the deflected slipstream and externally blown flap concepts are assessed, with emphasis on the latter; an empirical method for the prediction of the longitudinal aerodynamic characteristics of externally blown flap configurations is presented; and high-lift technology for five lift/propulsion concepts is assessed in application to a medium-sized STOL transport. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 723 848 21/5  
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
PARIS (FRANCE)Small Gas Turbines for Helicopters and  
Surface Transport. (U)

DESCRIPTIVE NOTE: Lectures series.

MAY 71 142P

REPT. NO. AGARD-LS-46-71

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO furnished.

DESCRIPTORS: (\*GAS TURBINES, \*SYMPOSIA), (\*HELICOPTER  
ENGINES, GAS TURBINES), (\*SURFACE PROPULSION, GAS  
TURBINES), VEHICLES, STATE-OF-THE-ART REVIEWS,  
RELIABILITY, LIFE EXPECTANCY, EXHAUST GASES, TURBINE  
PARTS, PERFORMANCE (ENGINEERING) (U)

After a survey of the field of application for small gas turbines, to replace reciprocating engines for helicopters and surface vehicles propulsion, the present state-of-the-art is reviewed together with problems related to reliability, life time, pollution regulation, weight and volume according to various applications. Conventional and advanced cycles (cycle of Nernst cycle with heat exchange) will be compared. A description of components (compressors, combustion chamber, turbines, nozzles, shafts with various configurations) will be followed by a review of industrial and technological problems. The use of small gas turbines for power generation, auxiliary stand by or emergency power plant is then presented. The last paper is a survey of future possible developments and performance improvements (mixed diesel and turbines--use of high temperature materials). (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 723 586 17/2 5/10  
HASKINS LABS NEW HAVEN CONN

Speech Research: A Report on the Status and Progress of Studies on the Nature of Speech, Instrumentation for Its Investigation, and Practical Application.

DESCRIPTIVE NOTE: Status rept. 1 Jul-30 Sep 70.

SEP 70 212P

REPT. NO. SR-23-1970

CONTRACT: N00014-67-A-0129-0001, PHS-DE-01774

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated 30 Jun 70, AD-719 382.

DESCRIPTORS: (\*SPEECH, \*STATE-OF-THE-ART REVIEWS), PHONETICS, AUDITORY PERCEPTION, HEARING, SYNTHESIS, TIME, INSTRUMENTATION

(U)

The reports are state-of-the-art reviews of work central to the Laboratories' areas of research: phonetics--an overview; the perception of speech; physiological aspects of articulatory behavior; laryngeal research in experimental phonetics; speech synthesis for phonetic and phonological models; on time and timing in speech; a study of prosodic features. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 723 392 4/2  
AIR WEATHER SERVICE SCOTT AFB ILL

Forecasters' Guide to Tropical Meteorology.

DESCRIPTIVE NOTE: Technical rept.,

APR 71 361P

Atkinson, Gary D. ;

REPT. NO. AWS-TR-240

UNCLASSIFIED REPORT

DESCRIPTORS: (\*WEATHER FORECASTING, \*TROPICAL REGIONS), AIR FORCE OPERATIONS, INSTRUCTION MANUALS, CLIMATE, ATMOSPHERIC MOTION, MATHEMATICAL MODELS, TROPICAL CYCLONES, BAROMETRIC PRESSURE, ATMOSPHERIC TEMPERATURE, HUMIDITY, CLOUDS, RAINFALL, STATE-OF-THE-ART REVIEWS

IDENTIFIERS: SYNOPTIC METEOROLOGY

(U)

(U)

A practical manual is presented for training and reference use of USAF weather forecasters who will work in the tropics. It covers basic facts of climatology circulation, synoptic models, analysis and forecasting, applicable throughout the tropics. A broad survey is made of the literature, evaluated in light of the experience of the author. Physical factors controlling tropical circulations are briefly discussed. The data sources for synoptic purposes are reviewed. Climatology of pressure, winds, temperature, humidity, clouds, rainfall and disturbances is presented in a form specially suitable for forecasters. Analysis and forecasting of disturbances, cyclones, severe weather, terminal weather, etc., are treated at length. Emphasis is placed on uses of climatology and satellite cloud photos. Over 230 figures adapted from the literature or prepared by the author serve to illustrate all the essential facts and principles discussed. A summary of the state of art and future outlook of tropical meteorology is included. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 720 843 9/2  
HAWAII UNIV HONOLULU

Computers in Japan.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
JAN 71 26P Kuo, Franklin F. ;  
REPT. NO. THEMIS-A71-1  
CONTRACT: F45620-69-C-0030  
PROJ: AF-9749  
MONITOR: AFOSR TR-71-0738

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on the Aloha System.

DESCRIPTORS: (=COMPUTERS, JAPAN), STATE-OF-THE-ART  
REVIEWS, PROGRAMMING LANGUAGES, TIME SHARING, (U)  
INDUSTRIES, GRAPHICS, PERFORMANCE(ENGINEERING) (U)  
IDENTIFIERS: ALOHA SYSTEM, THEMIS PROJECT, COMPUTERS, (U)  
GRAPHICS, COMPUTERS (U)

A critical examination of the Japanese computer industry is presented. Some firsthand observations of current projects and practices in computing in Japan are also given. (Author)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 720 260 17/7  
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
PARIS (FRANCE)

A Literature Survey on the Gyroscope and Its Applications.

(U)

FEB 71 20P Sorg, Helmut ;  
REPT. NO. AGARD-582

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO furnished.

DESCRIPTORS: (=GYROSCOPES, \*BIBLIOGRAPHIES), STATE-OF-THE-ART REVIEWS, INERTIAL NAVIGATION, INSTRUMENTATION, DYNAMICS, FLIGHT CONTROL SYSTEMS, GYRO COMPASSES, SPACE NAVIGATION, MATHEMATICAL MODELS, THEORY, AIRCRAFT EQUIPMENT, AUTOMATION, ERRORS, GYRO STABILIZERS, CLASSIFICATION (U)  
IDENTIFIERS: NATO, ANNOTATED BIBLIOGRAPHIES, (U)  
GYRODYNAMICS (U)

The purpose of the report is to offer engineers and scientists a listing of books which are readily available from commercial sources, as well as from various documentation centers and libraries. Only books which were unclassified and unrestricted were considered for this bibliographical listing. This list is a comprehensive tabulation of works by engineers and scientists in the various NATO nations. It also includes some Russian texts on the subject, many of which have been translated into English. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 719 902 6/19  
NAVAL AIR DEVELOPMENT CENTER WARMINSTER PA AEROSPACE  
MEDICAL RESEARCH DEPT

A Review of Experimental Data on the  
Cardiovascular Response to Acceleration. (U)

DEC 70 23P Goodhart, Glen L. ;  
REPT. NO. NADC-WR-7004  
PROJ: MF12.524  
TASK: MF12.524.005  
MONITOR: NAVMED MF12.524.005-7001-14

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CARDIOVASCULAR SYSTEM, \*ACCELERATION  
TOLERANCE), STATE-OF-THE-ART REVIEWS,  
STRESS(PHYSIOLOGY). SIMULATION, GRAVITY, CEREBROSPINAL  
FLUID, VEINS, ARTERIES, PULSE RATE, HUMANS, LABORATORY  
ANIMALS, EXPERIMENTAL DATA, NAVAL RESEARCH (U)  
IDENTIFIERS: COMPUTERIZED SIMULATION (U)

Controlled physiological responses to gravitational stress is a major concern in cardiovascular simulation. Information pertaining to the physiological effects of positive acceleration on the cardiovascular system has been gathered from the literature and is presented in light of requirements for cardiovascular simulation. Both generalized and long term responses to G stress are considered as well as the transient G studies that were available. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 718 828 6/6 17/2.1  
NAVAL ELECTRONIC SYSTEMS COMMAND WASHINGTON D C  
SANGUINE System Environmental Compatibility Assurance Program (ECAP). (U)

DESCRIPTIVE NOTE: Status rept. 1967-70.  
DEC 70 37SP Carlson, Richard E. ;  
PROJ: PME-117-21

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ELECTROMAGNETIC FIELDS, EXTREMELY LOW FREQUENCY), (\*GLOBAL COMMUNICATION SYSTEMS, EXTREMELY LOW FREQUENCY), (\*ECOCLOGY, ELECTROMAGNETIC FIELDS), TEST FACILITIES, ENVIRONMENT, MANAGEMENT PLANNING AND CONTROL, BIOCHEMISTRY, SAFETY, STATE-OF-THE-ART REVIEWS, THEORY, PLANTS(BOTANY), RADIOFREQUENCY INTERFERENCE (U)  
IDENTIFIERS: SANGUINE PROJECT (U)

The Project SANGUINE environmental compatibility assurance program is described: its goals, work accomplished and results to date are presented. Part 1 is the program overview. The ECAP, the SANGUINE environment, the program status, and future research plans are outlined. Part 2 is a summary of major program areas. Biological and ecological assurance includes pertinent literature, electrical safety, biological and biochemical research, ecological surveys, heart pacer experiments and associated activities. Facilities construction and operation assurance addresses environmental awareness, land acquisition and joint use, installation, land restoration and coordination. Interference mitigation describes interference theories, systems and devices susceptible to extremely low frequency (ELF) interference, interference mitigation thresholds, techniques and practices. Part 3 is a description of the program management. Supporting technical documentation is provided in four appendices. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 718 811 13/5 13/8  
NAVAL ORDNANCE LAB WHITE OAK MDA Survey of the Ultrasonic Inspection of  
Welds.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jul 65-30 Jun 66,  
FEB 67 44P  
REPT. NO. 67 Youshaw, Robert A. ;  
PROU: NOL-67-29  
NOL-693

UNCLASSIFIED REPORT

DESCRIPTORS: (\*WELDS, NONDESTRUCTIVE TESTING),  
(\*NONDESTRUCTIVE TESTING, ULTRASONIC RADIATION), STATE-  
OF-THE-ART REVIEWS (U)

A state-of-the-art survey was made on the ultrasonic inspection of welds including a thorough search of the literature and personal contacts with representatives of companies engaged in fabricating and inspecting steel welds. In general this survey revealed that both the technology and equipment are available for weld inspection by ultrasonics. Many examples of successful application are cited. The survey also revealed that many potential applications with economic advantage are precluded by contractual agreements which specify a different form of testing. This and other problems which retard the further usage of ultrasonics are discussed and recommendations are made.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 718 096 9/1 17/5 17/8 20/12  
AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONSPhotodetectors for the 0.1 Micrometer to 1  
Micrometer Spectral Region,

(U)

JAN 71 212P Seib, David H. ; Aukerman,  
Lee W. ;  
REPT. NO. TR-0059(9230-20)-1  
CONTRACT: F04701-70-C-0059  
MONITOR: SAMSO TR-71-14

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SEMICONDUCTOR DEVICES, PERFORMANCE(ENGINEERING)), (\*INFRARED DETECTORS, STATE-OF-THE-ART REVIEWS), (\*ULTRAVIOLET DETECTORS, STATE-OF-THE-ART REVIEWS), PHOTODIODES, PHOTOELECTRIC MATERIALS, PHOTOCONDUCTIVITY, PHOTOELECTRIC EFFECT, PHOTOTUBES, PHOTOMULTIPLIER TUBES, AVALANCHE DIODES, ALKALI METAL COMPOUNDS, INFRARED SPECTRA, PHOTOCATHODES, BAND THEORY OF SOLIDS, GAIN, SIGNAL-TO-NOISE RATIO, PHOTOELECTRIC CELLS(SEMICONDUCTOR), ULTRAVIOLET SPECTRA, VISIBLE SPECTRA, IONIZATION CHAMBERS (U)  
IDENTIFIERS: \*PHOTODETECTORS (U)

The state of the art of detectors of electromagnetic radiation in the wavelength region 0.1 micrometer to 1 micrometer is reviewed. The types of detectors considered are photoemissive detectors, semiconductor junction detectors, photocathodes, and photoionization chamber devices. For each type of detector the theory of operation and general material and device properties, including spectral response, frequency response, noise properties, etc., are discussed. The actual properties of presently available, state-of-the-art detectors are summarized. Finally, a comparison of the detectivities possible with the various types of detectors over the 0.1 micrometer to 1 micrometer wavelength range is given. Comparisons of other relevant detector properties (speed of response, reliability) are also included. (Author)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 717 655 1/4

AERONAUTICAL SYSTEMS DIV WRIGHT-PATTERSON AFB OHIO

The Feasibility of Utilizing Color Cathode Ray Tubes for Aircraft Crew Station Displays.

(U)

DESCRIPTIVE NOTE: Technical rept. Feb-May 70,  
NOV 70 47P Yokits, Ronald S. ;  
REPT. NO. ASD-TR-70-33

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT INSTRUMENTS, COLOR TELEVISION TUBES), (\*COLOR TELEVISION TUBES, DISPLAY SYSTEMS), FEASIBILITY STUDIES, STATE-OF-THE-ART REVIEWS, CATHODE RAY TUBE SCREENS (U)

The report compiles the characteristics of various state-of-the-art color cathode ray tubes (CRT's). The structures, theory of operation, and technical advantages and disadvantages of the various color CRT's for use in aircraft display instruments are evaluated. The results of the study were that presently available types of color CRT's are not suitable for cockpit displays and the Penetron and other non-patterned screens could be used in low ambient light areas. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 716 953 5/9

FLORIDA STATE UNIV TALLAHASSEE COMPUTER-ASSISTED INSTRUCTION CENTER

The Development and Implementation of a Model for the Design of Individualized Instruction at the University Level.

(U)

DESCRIPTIVE NOTE: Technical rept.,  
OCT 70 208P Lipe, James Gary ;  
REPT. NO. CAI-TR-15  
CONTRACT: N00014-68-A-0494  
PROJ: NR-154-280

UNCLASSIFIED REPORT

DESCRIPTORS: (\*INSTRUCTORS, TRAINING), (\*UNIVERSITIES, INSTRUCTORS), (\*PROGRAMMED INSTRUCTION, ADAPTIVE SYSTEMS), MODELS(SIMULATIONS), TEACHING METHODS, STATISTICAL PROCESSES, CORRELATION TECHNIQUES, STATE-OF-THE-ART REVIEWS, ANALYSIS, DESIGN, PREDICTIONS (U)  
IDENTIFIERS: INSTRUCTION MODELS (U)

The study involved the development and implementation of the Production, Implementation Evaluation and Revision of Instructional Modules (PIERIM) model for the design of individualized instruction. PIERIM is designed as an interactive model with activities explicitly prescribed for the instructor and the educational technologist. PIERIM's purpose is to provide a means by which the content of existing teacher training programs can be transformed into a format (i.e., instructional modules) which is compatible with an individualized teacher training program. The PIERIM model was also compared with two other system models for the design of instruction. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD- 716 503 6/12  
WESTINGHOUSE ELECTRIC CORP PITTSBURGH PA HEALTH SYSTEMS  
DEPT

Systems Analysis Study Towards a 'New  
Generation' of Military Hospitals. Volume  
IV. State-of-the-Art. (U)

DESCRIPTIVE NOTE: Final rept. 25 Jun 69-24 Nov 70 on  
Phase 1.

NOV 70 407P

CONTRACT: DAHC15-69-C-0354, ARPA Order-1494

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, AD-716 502 and  
Volume 5, AD-716 504.

DESCRIPTORS: (\*HOSPITALS, SYSTEMS ENGINEERING),  
(\*MILITARY MEDICINE, HOSPITALS), STATE-OF-THE-ART  
REVIEWS, INVENTORY, MEDICINE, DIAGNOSIS(MEDICINE),  
PUBLIC HEALTH, MEDICAL LABORATORIES, DENTISTRY, COSTS,  
SURGERY, NUTRITION, MONITORS, PHYSIOLOGY, MEDICAL  
PERSONNEL, MANAGEMENT PLANNING AND CONTROL, TRAINING,  
RADIOGRAPHY (U)  
IDENTIFIERS: \*MEDICAL SERVICES, \*MILITARY HOSPITALS, (U)  
\*MULTIPHASIC HEALTH TESTING, \*PREVENTIVE MEDICINE (U)

The volume presents the State of the Art (SOA)  
of sixteen areas related to the Base Level  
Health Care System. For each area, the SOA  
improvement alternatives that are now available or  
will be by 1972, and the advanced technology  
improvement alternatives likely to be available in  
the 1972 - 1980 time frame are presented. The  
survey forms a major data resource for the Systems  
Analyses volume of this report. The sixteen  
areas surveyed were: General medicine; clinical  
laboratory; communications and data management;  
construction; dentistry; dietary; education and  
training; maintenance and housekeeping; materiel  
handling; multiphasic testing; pharmacy;  
physiological monitoring; planning; radiology;  
sterilization; and ward management. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD- 716 502 6/12  
WESTINGHOUSE ELECTRIC CORP PITTSBURGH PA HEALTH SYSTEMS  
DEPT

Systems Analysis Study Towards a 'New  
Generation' of Military Hospitals. Volume  
III. Medical Health Care Review. (U)

DESCRIPTIVE NOTE: Final rept. 25 Jun 69-24 Nov 70 on  
Phase 1.

NOV 70 118P

CONTRACT: DAHC15-69-C-0354, ARPA Order-1494

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-716 501 and  
Volume 4, AD-716 503.

DESCRIPTORS: (\*HOSPITALS, SYSTEMS ENGINEERING),  
(\*MILITARY MEDICINE, HOSPITALS), DESIGN, EFFECTIVENESS,  
EFFICIENCY, COSTS, OPERATION, PUBLIC HEALTH, MANAGEMENT  
PLANNING AND CONTROL, MODELS(SIMULATIONS), MILITARY  
PERSONNEL, MEDICAL PERSONNEL, STATE-OF-THE-ART  
REVIEWS (U)  
IDENTIFIERS: \*MEDICAL SERVICES, \*MILITARY  
HOSPITALS (U)

The data presented were collected by the  
Westinghouse Medical Health Care Review  
Team, composed of physicians, nurses and a hospital  
administrator, during interviews and observations at  
the three primary Base Level Health Care  
Systems (BLHCS). The basic objective of this  
study was to identify and evaluate the critical  
elements within the BLHCS which directly or  
indirectly affect the delivery of professional  
services. Results of observations/interviews and  
recommendations are presented for the following five  
elements basic to effective operation of a BLHCS:  
The quality of personnel (i.e., qualifications,  
assignments and continuing education); the  
facilities (space, beds, special care and  
diagnostic units and equipment); the professional  
services (diagnostic, therapeutic and special);  
policies and practices for basic health services  
(outpatient and emergency department, admissions,  
etc.); quality control (tissue and hospital stay  
committees, death-complication conferences etc.).  
(Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 715 674 20/1 20/12  
 NORTHWESTERN UNIV EVANSTON ILL INFORMATION-PROCESSING AND  
 CONTROL SYSTEMS LAB

Surface Microacoustics. (U)

DESCRIPTIVE NOTE: Technical rept..

REPT. NO. SEP 70 89p Epstein, Max ;

TR-70-101

CONTRACT: N00014-67-A-0356-0003, ARPA Order-1129

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ULTRASONIC RADIATION, MICROWAVE  
 FREQUENCY), STATE-OF-THE-ART REVIEWS, BIBLIOGRAPHIES,  
 PIEZOELECTRIC CRYSTALS, SEMICONDUCTORS, CADMIUM  
 SULFIDES, MAGNETOSTRICTION, RADAR EQUIPMENT (U)  
 IDENTIFIERS: LITHIUM NIOBATES, LOVE WAVES,  
 MAGNETOELASTIC EFFECTS, MAGNONS, \*MICROACOUSTICS,  
 \*ACOUSTICS, \*MICROWAVES, \*ACOUSTIC WAVES, \*SURFACE  
 WAVES, PIEZOELECTRIC MATERIALS, SEMICONDUCTORS,  
 INTERDIGITAL TRANSDUCERS, SURFACE WAVES (U)

The report contains an introduction to the field of  
 surface microacoustics. It includes a review of  
 the present state-of-the-art, and an annotated  
 bibliography. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 714 693 20/11  
 CALIFORNIA UNIV LOS ANGELES DEPT OF MATERIALS

Recent Developments in Macroscopic and  
 Microscopic Fracture Mechanics. (U)

DESCRIPTIVE NOTE: Technical rept.,

REPT. NO. SEP 70 50p Tetelman, Alan S. ;

TR-2

CONTRACT: DAHCO4-69-C-0008

PROJ: DA-2-O-061102-B-32-D

MONITOR: ARDD 8016:2-MC

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FRACTURE(MECHANICS), STATE-OF-THE-ART  
 REVIEWS), ALLOYS, PREDICTIONS (U)

The report presents a brief state-of-the-art review  
 of the science and application of Fracture  
 Mechanics Technology as of Spring 1970. Part  
 1 contains a brief introduction to fracture mechanics  
 and fracture toughness. Part 2 illustrates how  
 various fracture toughness data correlate with each  
 other. In Part 3 relations between macroscopic  
 and microscopic aspects of fracture in low alloy  
 steels are presented. In Part 4, the fracture  
 behavior of high strength materials is treated,  
 while Part 5 deals with some aspects of safe-life  
 prediction in alloys. (Author) (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZC007  
 AD- 713 915 14/2 19/4  
 ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
 PARIS (FRANCE)

Ballistic-Range Technology. (U)

DESCRIPTIVE NOTE: AGARDograph rept.,  
 AUG 70 513P Canning, Thomas N. :Seiff,  
 Alvin ;James, Carlton S. ;  
 REPT. NO. AGARD-AG-138-70

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO furnished.

DESCRIPTORS: (=RANGES(FACILITIES). CONFIGURATION).  
 (=BALLISTICS. EXPERIMENTAL DATA). EXTERIOR BALLISTICS.  
 TERMINAL BALLISTICS. LIGHT GAS GUNS. SABOT PROJECTILES.  
 WIND TUNNELS. HYPERVELOCITY GUNS. DETECTORS. MEASURING  
 INSTRUMENTS. MEASURING INSTRUMENTS. AERODYNAMIC  
 CHARACTERISTICS. STATE-OF-THE-ART REVIEWS (U)

The report is a comprehensive treatment of the state-of-the-art of ballistic-range testing, written for graduates by members of the staffs of the Hypersonic Free-Flight Branch at NASA-Ames Research Center and the Aerophysics Division of the Defence Research Establishment of Canada. The capability and potential of ballistic ranges are not as widely appreciated as they deserve to be and the book aims to show the opportunities they afford for experimental research in ballistic-missile aerodynamics, to point out the problems involved, to guide the preliminary design of new ballistic ranges, to provide reference material to enable full exploitation of existing ranges, and to help in evaluating the applicability and accuracy of results. Individual chapters deal with modern ranges and their uses, light-gas guns, model design and launching techniques, terminal ballistics, counterflow, measurement systems, aerodynamics of bodies from motion analysis, photographic techniques, optical radiation studies, microwave studies, point measurements in the wake and convective-heating measurements. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M07  
 AD- 713 794 13/10.1  
 NAVAL INTELLIGENCE COMMAND ALEXANDRIA VA TRANSLATION  
 DIV

SUBMARINES VERSUS SUBMARINES. (U)

OCT 70 41P Suzdalev, N. I. ;  
 REPT. NO. NIC-Trans-3130

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of mono. Podvodnie Lodki  
 Protiv Podvodnikh Lodek, n.p., 1968 p45-87.

DESCRIPTORS: (=SUBMARINES, NUCLEAR POWERED SHIPS),  
 MARINE NUCLEAR PROPULSION, BALLISTIC MISSILE SUBMARINES,  
 GUIDED MISSILES(underwater-to-surface), antisubmarine  
 ammunition, rockets, submarine hulls, state-of-the-art  
 reviews, ussr (U)  
 IDENTIFIERS: NATO COUNTRIES, TRANSLATIONS (U)

The report is a state-of-the-art review of present and proposed nuclear powered submarines of various non-communist countries. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 713 656 6/12 9/2  
PHILCO-FORD CORP PALO ALTO CALIF WESTERN DEVELOPMENT  
LABS

FEASIBILITY STUDY AUTOMATED MEDICAL EXAMINING  
SYSTEM STATE-OF-THE-ART SURVEY - DATA  
PROCESSING EQUIPMENT.

(U)

DESCRIPTIVE NOTE: Rept. on Phase 1, 1 Dec 69-25 Aug  
70.

SEP 70 114P  
REPT. NO. WDL-TR-4173-AUG-70  
CONTRACT: F41609-70-C-0012  
PROJ: AF-7936  
TASK: 799603  
MONITOR: SAM TR-70-84

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-713 655.

DESCRIPTORS: (-DATA PROCESSING, STATE-OF-THE-ART  
REVIEWS), (-MEDICAL EXAMINATION, AUTOMATION), COMPUTERS,  
FEASIBILITY STUDIES, COMPUTER PROGRAMS, DATA STORAGE  
SYSTEMS, COSTS, RELIABILITY, MAINTENANCE, EFFICIENCY (U)

The survey was conducted to identify all existing  
equipment and procedures capable of accomplishing  
recommended improvements in Armed Forces  
Entrance and Examination Station operations.  
This survey classifies the alternative devices or  
procedures which should be considered for each AFEEs  
data handling function in order of estimated merit  
based upon such factors as cost, reliability,  
maintainability and personnel requirements.  
(Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 713 655 6/12 9/2  
PHILCO-FORD CORP PALO ALTO CALIF WESTERN DEVELOPMENT  
LABS

FEASIBILITY STUDY AUTOMATED MEDICAL EXAMINING SYSTEM  
STATE OF THE ART SURVEY - MEDICAL.

(U)

DESCRIPTIVE NOTE: Rept. on Phase 1, 1 Dec 69-29 May  
70.

SEP 70 157P  
REPT. NO. WDL-TR-4173-MAY-70  
CONTRACT: F41609-70-C-0012  
PROJ: AF-7996  
TASK: 799603  
MONITOR: SAM TR-70-83

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-713 656.

DESCRIPTORS: (-MEDICAL EXAMINATION, AUTOMATION),  
(\*MEDICAL EQUIPMENT, STATE-OF-THE-ART REVIEWS),  
FEASIBILITY STUDIES, TEST METHODS, MEDICAL LABORATORIES,  
DATA PROCESSING, COMPUTERS, MEDICAL PERSONNEL, COSTS,  
RELIABILITY, EFFICIENCY (U)

The survey was conducted to identify all existing  
equipment and procedures capable of accomplishing  
recommended improvements in the Armed Forces  
Entrance and Examination Stations (AFEEs)  
physical examination. This survey classifies the  
alternative devices or procedures which should be  
considered for each AFEEs medical function in order  
of estimated merit based upon such factors as cost,  
reliability, maintainability, personnel requirements,  
data handling requirements, and resistance to  
malfunctioning. (Author)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 713 644 8/13 13/2  
WATER RESOURCES ENGINEERS INC WALNUT CREEK CALIF\*

EROSION CONTROL ON AIR FORCE BASES. (U)

DESCRIPTIVE NOTE: Technical note,  
AUG 70 25P Hay, Delynn R. ; Kibler, D.

F. ; Busby, C. E. ;

CONTRACT: F29601-69-C-0039

PROJ: AF-921A

TASK: 921A06

MONITOR: WLC TN-70-018

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Annual Meeting of  
the American Society of Agronomy, Div. A-2,  
Tucson, Ariz., 24-28 Aug 70.DESCRIPTORS: (\*EROSION, CONTROL), (\*SOILS, EROSION),  
(-CONSTRUCTION, MILITARY FACILITIES), STATE-OF-THE-ART  
REVIEWS, CONTROL, RAINFALL, DRAINAGE, INTENSITY,  
EXPOSURE (PHYSIOLOGY), TERRAIN, WIND, WATER, PARTICLES,

AIR FORCE OPERATIONS (U)

IDENTIFIERS: \*CONTROL, \*EROSION (U)

A state-of-the-art review of the soil erosion field  
as it relates to the erosion control needs of the US  
Air Force was conducted. The review will serve

as a guide for preparation of a Base Civil

Engineer erosion control handbook. Typical

military construction activities which have exposed

large areas of unprotected soil and subsequently have

led to serious erosion problems are presented.

Factors involved in the wind and erosion processes

are discussed and soil-loss equations and soil

erodibility indices are reviewed. The erodibility

K-factor in the ARS soil-loss equation is

evaluated for land management planning techniques.

Guidelines for effective erosion control practices

to protect exposed land surfaces against soil

particle detachment and transport by either water or

wind are presented. Further efforts to establish a

more reliable erodibility index which can be used to

define areas of highly erodible soils, especially for

subsurface soils that are exposed during construction

are indicated. (Author) (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 712 314 15/3  
STANFORD RESEARCH INST MENLO PARK CALIFTHE USE OF SYSTEMS TECHNIQUES IN CIVIL  
DEFENSE. (U)DESCRIPTIVE NOTE: Final rept.,  
MAY 70 186P Devaney, John F. ;

CONTRACT: DAHC20-67-C-0136

PROJ: OCD-2313A

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with URS  
Research Co., San Mateo, Calif., Rept. no. URS-  
691.DESCRIPTORS: (\*CIVIL DEFENSE, \*SYSTEMS ENGINEERING),  
RESEARCH MANAGEMENT, STATE-OF-THE-ART REVIEWS, TRAINING,  
BUDGETS, UNITED STATES GOVERNMENT, SHELTERS, COST  
EFFECTIVENESS (U)  
IDENTIFIERS: EVALUATION (U)Civil defense has the attributes of a system and  
the techniques of systems evaluation have been  
applied in the development of policy and programs  
since the middle 1950's. Advances have been made  
in the state-of-the-art of civil defense and of  
systems evaluation. Application of systems  
evaluation techniques to civil defense is reviewed.  
A modified analytic framework is presented with  
definitions, graphic aids, and a qualitative  
demonstration of the method and of its application to  
other activities such as: operational planning,  
organization, training, and so on. (Author) (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 712 301 14/2 8/11 13/2  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISS

GELATIN MODELING METHODS FOR THE STUDY OF FOUNDATION  
DYNAMICS GROUND MOTION, AND SEISMIC PHENOMENA, (U)

FEB 68 40P Paek,Yong K. ;Heller,Lyman  
W. ;  
REPT. NO. AEWES-Misc-Paper-4-969  
PROJ: DA-1-L-013001-A-91-A

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*SEISMOLOGY, MODELS(SIMULATIONS)),  
(\*FOUNDATIONS(STRUCTURES)), SEISMIC WAVES), GELATINS,  
STATE-OF-THE-ART REVIEWS, ELASTIC PROPERTIES, LIFE  
EXPECTANCY, COSTS (U)  
IDENTIFIERS: GROUND MOTION (U)

The objective of this study was to assess by means of a literature review the state-of-the-art in gelatin modeling methods to determine if they can be successfully exploited for solving difficult problems in the field of foundation dynamics, ground motion, and seismic phenomena. Important practical problems such as the influence of multiple layers, variable thickness of layers, and rough interfaces on ground motion and seismic wave propagation might be formulated, studied, and evaluated with these techniques. Gelatin modeling holds promise for effective use in the study of alternate remedial approaches for the stabilization of existing foundations that may become inadequate for future operational requirements. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 711 267 13/10 20/4  
TELEDYNE MATERIALS RESEARCH CO WALTHAM MASS

SLAMMING OF SHIPS: A CRITICAL REVIEW OF THE  
CURRENT STATE OF KNOWLEDGE. (U)

DESCRIPTIVE NOTE: Technical rept.,  
70 48P Henry,J. R. ;Bailey,F.

C. ;  
CONTRACT: N00024-67-C-5312, N00024-69-C-5231  
PROJ: SR172  
MONITOR: SSC 208

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Sponsored in part by Contract  
NObs-94252.

DESCRIPTORS: (\*SHIPS, \*HYDRODYNAMICS), (\*SHIP HULLS,  
IMPACT), STATISTICAL ANALYSIS, DESIGN, STATE-OF-THE-ART  
REVIEWS, CARGO SHIPS (U)  
IDENTIFIERS: WOLVERINE STATE VESSEL, \*SLAMMING (U)

The review of bottom slamming phenomena was undertaken to assure that maximum value will be gleaned from recorded data obtained on the SS Wolverine State. The review covers experimental laboratory and ship data and their correlation with available theory; and structural implications and possible design improvements. Although there are certain areas in the theory which require expansion, the most pressing need is for additional full-scale experimental data to provide confirmation of existing analytical techniques. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 709 294 20/13 7/4  
CALIFORNIA UNIV SAN DIEGO LA JOLLA DEPT OF PHYSICS

SUPERCONDUCTIVITY AND THE PERIODIC SYSTEM. (U)

70 7P Mattnias, Bernd T. ;

CONTRACT: AF-AFOSR-631-67

PROJ: AF-9763

TASK: 976303

MONITOR: AFOSR 70-1967TR

UNCLASSIFIED REPORT

Availability: Pub. in American Scientist, v58 n1  
p80-83 Jan-Feb 70.

DESCRIPTORS: (\*SUPERCONDUCTIVITY, CHEMICAL ELEMENTS),  
STATE-OF-THE-ART REVIEWS, TRANSITION TEMPERATURE,  
MAGNETIC PROPERTIES, ATOMIC ORBITALS (U)  
IDENTIFIERS: BCS THEORY (U)

In the past, when there was not the rigid and rather arbitrary split between physics and chemistry that we find now, Mendeleev's periodic system for the elements was a major foundation of the natural sciences. Gradually, after the discovery of the Pauli principle, the concern of physicists with the periodic system began to fade, since the basic explanation for the periodicity was now given. And finally, today, its use is almost considered the trademark of an alchemist. Yet, by paying close attention to the rather elementary systematics of the periodic system, we have managed to discover many hundreds of new superconductors and to raise the transition temperatures to their present maximum value, namely one half of a degree above the boiling point of liquid hydrogen at atmospheric pressures. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 709 086 5/10  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

DYNAMIC DEPTH PERCEPTION. (U)

DESCRIPTIVE NOTE: Master's thesis,

APR 70 48P

Roistad, Lawrence Arian ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*VISUAL ACUITY, MOTION), (\*SPACE PERCEPTION, PERFORMANCE(HUMAN)), VISION, NAVAL RESEARCH, RESPONSE(BIOLOGY), STATE-OF-THE-ART REVIEWS, THRESHOLDS(PHYSIOLOGY), STATISTICAL DATA, CORRELATION TECHNIQUES, PERFORMANCE(HUMAN), THESES (U)

A review of research in visual acuity and depth perception of moving objects disclosed differing estimates of the relation between dynamic and static vision performance. Additionally, two distinct types of responses appear in distance estimates for moving targets as well as the elapsed time estimates for partially concealed targets. The possible relation of this depth estimation error dichotomy to lateral phoria is discussed. An experiment demonstrates that the depth estimation error is independent of the direction of target motion. Further evidence of the lack of correlation between dynamic and static depth perception is presented. (U)

(Author)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-708 028 5/1 9/2 15/7 5/2  
PLANNING RESEARCH CORP WASHINGTON D CCHIEF OF NAVAL OPERATIONS COMMAND/MANAGEMENT  
INFORMATION SYSTEM (CNOCOM/MIS) STUDY. VOLUME  
II. (U)DESCRIPTIVE NOTE: Final rept. Apr-Oct 69.  
JAN 70 20SP Jones, R. A.; Walker, R.  
C.; Dully, R.; Lackner, W. R.; Reardon, J.  
P.;REPT. NO. PRC-R-1388-Vol-2  
CONTRACT: N00014-69-A-0321

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-708 027.

DESCRIPTORS: (\*NAVAL OPERATIONS, MANAGEMENT PLANNING AND  
CONTROL). (\*MANAGEMENT PLANNING AND CONTROL,  
\*INFORMATION RETRIEVAL). DATA PROCESSING, MANAGEMENT  
PLANNING AND CONTROL, DECISION MAKING, DATA STORAGE  
SYSTEMS, DATA TRANSMISSION SYSTEMS, COMMAND AND CONTROL  
SYSTEMS, INPUT OUTPUT DEVICES, RECORDING SYSTEMS,  
COMPUTERS, COMPUTER PROGRAMMING, FLOW CHARTING, STATE-  
OF-THE-ART REVIEWS, DESIGN (U)IDENTIFIERS: \*MANAGEMENT INFORMATION SYSTEMS, MILITARY  
PLANNING (U)

The objective of the Chief of Naval Operations Command/Management Information System (CNOCOM/MIS) Study, as set forth in reference (a), is to develop a concept and implementation plan for the operation of a Chief of Naval Operations command/management information system which will provide Naval Operations management the capability to retrieve, display, evaluate and transmit information. The study is limited to the methods and facilities required to extract and fully utilize information from an automated data bank and is concerned with determining the required management/system interactions. It will deal with the development of operational procedures which will provide maximum responsiveness to the needs of the users. The determination of specific user information requirements and the design of the internal data processing system itself is being accomplished by separate means. (U)

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## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-708 027 5/1 5/2 9/2 15/7  
PLANNING RESEARCH CORP WASHINGTON D CCHIEF OF NAVAL OPERATIONS COMMAND/MANAGEMENT  
INFORMATION SYSTEM (CNOCOM/MIS) STUDY. VOLUME  
I. (U)DESCRIPTIVE NOTE: Final rept. Apr-Oct 69.  
JAN 70 260P Jones, R. A.; Walker, R.  
C.; Dully, R.; Lackner, W. R.; Reardon, J.  
P.;REPT. NO. PRC-R-1388-Vol-1  
CONTRACT: N00014-69-A-0321

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-708 028.

DESCRIPTORS: (\*NAVAL OPERATIONS, MANAGEMENT PLANNING AND  
CONTROL). (\*MANAGEMENT PLANNING AND CONTROL,  
\*INFORMATION RETRIEVAL). DATA PROCESSING, MANAGEMENT  
PLANNING AND CONTROL, DECISION MAKING, DATA STORAGE  
SYSTEMS, DATA TRANSMISSION SYSTEMS, COMMAND AND CONTROL  
SYSTEMS, FLOW CHARTING, DESIGN, STATE-OF-THE-ART REVI  
IDENTIFIERS: \*MANAGEMENT INFORMATION SYSTEMS, MILITARY  
PLANNING (U)

The purpose of the Chief of Naval Operations Command/Management Information System (CNOCOM/MIS) study was to develop an overall operating system concept and an implementation plan as a framework within which the Information Systems Division could design and implement CNOCOM/MIS. The objective of the system concept and implementation plan is to provide the Chief of Naval Operations and the OpNAV staff a framework within which to develop the capability to acquire, store, retrieve, display, evaluate and transmit information from an integrated data base to achieve better support for the information requirements of the Navy. The system to be implemented is to be highly automated and capable of responding to requirements in a timely fashion. (A THOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD- 707 708 9/1 17/7  
NAVAL RESEARCH LAB WASHINGTON D C

SOLID STATE MILLIMETER WAVE SOURCES FOR CAINS. (U)

DESCRIPTIVE NOTE: Interim rept.,

MAY 70 18P Ayoub, J. J. , Jr;

REPT. NO. NRL-MR-2132

PROJ: NRL-52-R01-48, A5-335-337/652-C/DW34150000

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*MICROWAVE OSCILLATORS, MILLIMETER WAVES),  
(\*SEMICONDUCTOR DEVICES, REVIEWS), INERTIAL NAVIGATION,  
NAVAL AIRCRAFT, VARACTOR DIODES, SEMICONDUCTOR DIODES,  
FREQUENCY MULTIPLIERS, STATE-OF-THE-ART REVIEWS, DATA  
TRANSMISSION SYSTEMS (U)

IDENTIFIERS: CAINS(CARRIER AIRCRAFT INERTIAL  
NAVIGATION SYSTEMS), GUNN DIODES, IMPATT DIODES (U)

The state of the art of Millimeter Wave  
Varactor Multipliers, IMPATT and Gunn  
Effect Oscillators is reviewed. The relative  
merits of using these sources as the local oscillator  
in an aircraft mounted millimeter wave receiver are  
discussed. This includes a discussion of the basic  
limitations, the practical limitations, and the need  
for determining the device performance from the  
systems designers viewpoint. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
AD- 705 524 1/3 13/10 13/10.1  
MASSACHUSETTS UNIV AMHERST SCHOOL OF ENGINEERING

DUCTED PROPELLERS--A REVIEW AND DESCRIPTION OF  
CURRENT INVESTIGATION, (U)

JAN 70 78P Weetman, Ronald J. ;Cromack,

Duane E. ;

REPT. NO. THEMIS-UM-70-1

CONTRACT: N00014-68-A-0146

PROJ: NR-200-016

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*SHROUDED PROPELLERS, \*STATE-OF-THE-ART  
REVIEWS), VERTICAL TAKEOFF AIRCRAFT, TUGBOATS, DEEP  
SUBMERGENCE, THEORY, EXPERIMENTAL DATA, MODEL TESTS,  
TEST FACILITIES, BIBLIOGRAPHIES (U)  
IDENTIFIERS: THEMIS PROJECT (U)

The paper describes the past theoretical and  
experimental work on ducted propellers. Also  
included is a discussion of the limitations of these  
past investigations. Since the ducted propeller is  
used primarily for low speed applications (i.e.,  
deep sea submersibles, tugboats and VTOL's) the  
theoretical and experimental development for low  
speed and static conditions is obviously needed. A  
description of the current and proposed theoretical  
and experimental investigation for these conditions  
is presented. (Author) (U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 704 140 8/2 8/13 15/7  
 AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD  
 MASS

EARTH SCIENCE APPLIED TO MILITARY USE OF NATURAL  
 TERRAIN. (U)

DESCRIPTIVE NOTE: Air Force Surveys in geophysics,  
 AUG 69 209P Needleman, Stanley M. ;

Molineux, C. E. ;  
 REPT. NO. AFRL-AFSIG-211, AFRL-69-0364  
 PROJ: AF-7600, AF-7628

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*AERIAL RECONNAISSANCE, MILITARY  
 OPERATIONS). (\*MAPPING, TERRAIN). (\*TERRAIN,  
 TRAFFICABILITY). STATE-OF-THE-ART REVIEWS.  
 CLASSIFICATION, LANDING FIELDS, TARGET ACQUISITION, DATA  
 PROCESSING, DATA STORAGE SYSTEMS, PHOTOINTERPRETATION,  
 GRAVITY, SOYAR, SEISMIC WAVES, GAMMA RAYS, LASERS,  
 INFRARED PHOTOGRAPHY, RADAR IMAGES, MULTIBAND SPECTRAL  
 RECONNAISSANCE, SOILS, RADIOMETERS, BIBLIOGRAPHIES  
 IDENTIFIERS: \*REMOTE SENSING (U)

A survey of the state-of-the-art in the evaluation  
 of natural terrain by earth-science techniques and  
 measurement systems is presented in response to a  
 need that existed for many years. This report  
 considers the terrain as an envelope of the  
 environment and all related parameters that are basic  
 in an evaluation for relevant military applications  
 such as unimproved landing areas, trafficability,  
 site selection for operational facilities, terrain  
 reconnaissance and surveillance, and target detection  
 within a masked terrain complex. Methods of  
 terrain-data acquisition, analysis, and evaluation  
 and their limitations are reviewed. The status of  
 research and development, specifying the gaps in  
 technology, is summarized with accompanying  
 conclusions. The report forecasts the requirement  
 for an automated terrain-data acquisition, storage,  
 and display system. Information pertaining to the  
 classification of terrain data, field devices to  
 measure bearing strength, and a visualized optimum  
 remote sensing system is also given in the appendix.  
 A glossary and a comprehensive bibliography are  
 included. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 704 137 17/2  
 MITRE CORP BEDFORD MASS

EQUALIZATION STUDIES FOR THE PAM DIGITAL  
 MODEM. (U)

DESCRIPTIVE NOTE: Technical rept.,

MAR 70 48P Post, Allen E. ;  
 REPT. NO. MTR-1723  
 CONTRACT: F19628-68-C-0365  
 PROJ: AF-700G  
 MONITOR: ESD TR-70-29

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Revision of Rept. no. WP-2888.

DESCRIPTORS: (\*DATA TRANSMISSION SYSTEMS, \*PULSE  
 AMPLITUDE MODULATION), MODULATORS, DEMODULATORS,  
 DISTORTION, STATE-OF-THE-ART REVIEWS, NARROWBAND,  
 TRANSMISSION LINES  
 IDENTIFIERS: \*MODEMS (U)  
 (U)

The report reviews the present state-of-the-art  
 techniques of narrowband (4 KHz) wireline  
 equalization for PAM signals. Two basic  
 minimization techniques are discussed. Related  
 derivations and proofs are included.  
 (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 703 377 5/9 5/10  
HUMAN RESOURCES RESEARCH ORGANIZATION ALEXANDRIA, VA

THEORY AND STATE OF THE ART OF SMALL-GROUP METHODS  
OF INSTRUCTION. (U)

DESCRIPTIVE NOTE: Technical rept.,  
MAR 70 54P Olmstead, Joseph A. ;  
REPT. NO. HUMRRO-TR-70-3  
CONTRACT: DAHC19-70-C-0012  
PROJ: DA-2-3-062107-A-712

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TEACHING METHODS, ADULTS), EFFECTIVENESS,  
GROUP DYNAMICS, MOTIVATION, ATTITUDES(PSYCHOLOGY),  
LEARNING, STATE-OF-THE-ART REVIEWS, THEORY (U)

The purpose of the report is to evaluate the more  
common small-group methods in terms of their  
effectiveness for teaching adults. A rationale for  
small-group instruction is presented, followed by  
descriptions of the principal methods, and an  
evaluation of the techniques based on existing  
research findings. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 703 313 13/10  
COAST GUARD BALTIMORE MD FIELD TESTING AND DEVELOPMENT  
CENTER

RECOGNITION CHARACTERISTICS STUDY FOR BUOYS. (U)

DESCRIPTIVE NOTE: Test rept.,  
JAN 70 67P Clark, G. P. ;  
REPT. NO. USCG-503  
PROJ: CG-792102/006

UNCLASSIFIED REPORT

PORTIONS OF THIS DOCUMENT ARE NOT FULLY LEGIBLE.  
SUPPLEMENTARY NOTE: Limited number of copies containing  
color other than black and white are available until stock  
is exhausted. Reproductions will be made in black and  
white only.

DESCRIPTORS: (\*BUOYS, \*VISUAL PERCEPTION), COLORS, SPAR  
BUOYS, VISUAL SIGNALS, OPERATION, VISUAL PERCEPTION,  
MODELS(SIMULATIONS), HARDORS, REFLECTION, PAINTS,  
DETECTION, COLOR PHOTOGRAPHY, COAST GUARD RESEARCH,  
VISION, STATE-OF-THE-ART REVIEWS (U)

By determining the present day required buoy  
significances, both lateral and non-lateral, to be  
provided as distinctive daymark qualities to the  
mariner, the present system of buoy color and shape  
coding is shown to have some shortcomings. The  
basis of these shortcomings stems from numerous  
additions to the original two-color, two-shape, two-  
signal system. A system is presented to provide a  
far more distinctive twelve-signal system utilizing  
four shapes and six colors. A review of the  
present day state-of-the-art of vision science yields  
some expectation as to which colors and shapes may be  
good. Experimentation is proposed to determine an  
optimal set of colors and shapes for the presented  
system. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 702 262 5/2 5/3  
DEFENCE RESEARCH BOARD OTTAWA (ONTARIO)

THE PRACTICE OF CHARGING USERS FOR INFORMATION SERVICES: A STATE OF THE ART REPORT.

70 21P Penner, Rudolf J. :

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of American Society for Information Science, v21 n1 p67-74 Jan/Feb 70.

DESCRIPTORS: (\*INFORMATION RETRIEVAL, \*COSTS), STATE-OF-THE-ART REVIEWS, ATTITUDES (PSYCHOLOGY), COST EFFECTIVENESS, DOCUMENTS, CANADA  
IDENTIFIERS: \*INFORMATION SERVICES

The state of the art literature review disclosed that society has not yet come to the point that paying for library information services is a common thing. It was also found that a sound basis for determining the costs of the services-let alone charge for them-does not exist: While some data on specific costs for unit perations are available, it is very difficult to compare the data and arrive at meaningful figures. Nevertheless, there is an indication that large operating centers are becoming concerned with costs to the point that they are cost-accounting their operations, which would permit them to establish realistic fees for their services.  
(Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 700 980 7/4 20/12  
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

SORPTION PUMPING OF HYDROGEN BY CRYODEPOSITS-SORPTION CAPACITY MEASUREMENT.

(U)

DESCRIPTIVE NOTE: Final rept. Apr-Sep 69,  
FEB 70 62P Tempelmeier, K. E. ;  
REPT. NO. AEDC-TR-69-266  
CONTRACT: F40600-69-C-0001  
PROJ: ARO-SW3003

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn.

DESCRIPTORS: (\*HYDROGEN, \*CRYOPUMPING), SORPTION, CARBON DIOXIDE, HELIUM, DIFFUSION, STATE-OF-THE-ART REVIEWS  
IDENTIFIERS: FROST

The state-of-the-art of cryosorption of hydrogen (H2) and helium by cold cryodeposited frost is reviewed and summarized in some detail, and the results of additional measurements of the sorption of H2 by carbon dioxide (CO2) frosts are reported. It is shown that the sorption capacity of the frost depends upon the conditions at which the frost was formed and upon its temperature history. Frosts formed in a manner to make them porous or disordered are shown to possess greater sorption capacities. It appears that surface diffusion of adsorbed molecules into a disordered frost structure is the basic pumping mechanism. Isotherms for H2 sorbed by CO2 frosts formed over a wide range of conditions are presented. Also, the reuse sorption capacity of CO2 frost is well documented. As a result of the present tests, it is now possible to put the process of frost cryosorption pumping into better perspective and understand the conflicting results of previous experimental investigations.  
(Author)

(U)

## UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 699 147 9/3 14/2  
NEW YORK UNIV N Y RESEARCH DIV

THE ELECTRONIC SENSOR. VOLUME I, (U)

NOV 69 78P Lax, Henry S.; DeSantis,

Gregory;

CONTRACT: N0C039-68-C-3607

PROJ: XF-013-17-01

TASK: 5730

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-699 148.

DESCRIPTORS: (\*ELECTRONIC EQUIPMENT, TEST EQUIPMENT),  
 (\*TEST EQUIPMENT, DETECTORS), TEST METHODS, AUTOMATIC,  
 STATE-OF-THE-ART REVIEWS, STANDARDS (U)  
 IDENTIFIERS: ATE(AUTOMATIC TEST EQUIPMENT), AUTOMATIC,  
 TEST EQUIPMENT, BITE(BUILT IN TEST EQUIPMENT), BUILT  
 IN TEST EQUIPMENT (U)

The electronic sensor is defined according to Mil-Std-1326 as 'Circuitry and related hardware located within the prime equipment for the purpose of providing a suitable test signal for the automatic test equipment (ATE) ...'. This report reflects the state-of-the-art and present availability of such sensors by an analysis of the special characteristics of the electronic sensor and by providing a collection of more than 250 individual sensor data sheets (both specially developed and standard off-the-shelf items) with descriptions and many block and circuit diagrams. Special consideration is given to sensors which meet the requirements of Mil-Std-1326 but the report is not limited to such sensors. To help the designer to select suitable sensors, sensor tabulations according to parameters and ranges are provided. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 697 956 14/2 11/4 11/9 1/3  
AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OHIOAEROSPACE-AFML CONFERENCE ON NDT OF PLASTIC/  
COMPOSITE STRUCTURES, DAYTON, OHIO, MARCH 18-  
20, 1969. (U)

DESCRIPTIVE NOTE: Technical papers

MAR 69 474P

PROJ: AF-7351

TASK: 735109

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRFRAMES, STRUCTURAL MEMBERS),  
 (\*REINFORCED PLASTICS, \*NONDESTRUCTIVE TESTING),  
 (\*COMPOSITE MATERIALS, NONDESTRUCTIVE TESTING),  
 SYMPOSIA, STATE-OF-THE-ART REVIEWS, QUALITY CONTROL, X  
 RAY PHOTOGRAPHY, ULTRASONIC RADIATION, OPTICAL  
 PROPERTIES, THERMAL PROPERTIES, ELECTRON MICROSCOPY,  
 SCHLIEREN PHOTOGRAPHY, MICROWAVES, DATA PROCESSING,  
 LAMINATES, HONEYCOMB CORES, SANDWICH CONSTRUCTION,  
 BONDING, DEFECTS(MATERIALS), SYSTEMS ENGINEERING, BLADE  
 AIRFOILS, FUEL NOZZLES (U)  
 IDENTIFIERS: COMPUTERS, GRAPHICS, EVALUATION, FIBER  
 COMPOSITES, F-5 AIRCRAFT, F-111 AIRCRAFT, HOLOGRAPHY,  
 T-38 AIRCRAFT (U)

The document contains a collection of twenty papers presented by nondestructive testing engineers and scientists at the Aerospace-AFML conference on nondestructive testing of Plastic/Composite Structures held in March, 1969. Topics covered included a state of the art review, acoustic optical imaging, x-ray mapping of flaws by computer graphics, ultrasonics, microwave and thermal techniques. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 695 458 14/2  
AEROSPACE CORP EL SEGUNDO CALIF ENGINEERING SCIENCE  
OPERATIONS

ASPECTS OF PRECISION TIMING SYSTEMS. (U)

OCT 69 118P Begley, Warren W. ; Shapiro, Arthur H. ;  
REPT. NO. TOR-0066(5306)-2  
CONTRACT: F04701-69-C-0066

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TIMING DEVICES, ACCURACY), (\*TIME  
INTERVAL COUNTERS, DESIGN), STATE-OF-THE-ART REVIEWS,  
TIME SIGNALS, ATOMIC CLOCKS, ELECTRONIC EQUIPMENT,  
SYNCHRONIZATION(ELECTRONICS), CALIBRATION, ERRORS,  
SCIENTIFIC SATELLITES, PERIODIC VARIATIONS, ANOMALIES,  
MASERS, CRYSTAL OSCILLATORS, RELIABILITY(ELECTRONICS)(U)

Various factors that are pertinent to the  
implementation and operation of precision timing  
systems are identified and evaluated. These  
factors include basic concepts associated with  
timekeeping, time scales, stable clocks and  
establishment and maintenance of time synchronization  
between remotely located clocks. As an example of  
the application of these factors, the precision  
timing system recently implemented in the United  
States Air Force (USAF) Satellite Control  
Facility (SCF) is described. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 692 774 14/2 9/3  
PENNSYLVANIA UNIV PHILADELPHIA OFFICE OF ENGINEERING  
RESEARCH

VALIDATION OF THEORETICAL AUTOMATIC CHECKOUT  
TECHNIQUES. (U)

DESCRIPTIVE NOTE: Final rept. Jun 65-Aug 68,  
OCT 68 306P Berkowitz, Raymond S. ; Faust, William G. ; Vartanian, Michael M. ;  
CONTRACT: AF 33(615)-2699  
PROJ: AF-8174  
TASK: 817412  
MONITOR: AFAPL TR-68-120

UNCLASSIFIED REPORT

DESCRIPTORS: (-ELECTRONIC EQUIPMENT, CHECKOUT  
PROCEDURES), (-CHECKOUT PROCEDURES, AUTOMATIC), TEST  
METHODS, STATISTICAL ANALYSIS, COMPUTER PROGRAMS, SEARCH  
THEORY, ALGORITHMS, FAILURE(ELECTRONICS), DIGITAL  
COMPUTERS, SIMULATION, FEASIBILITY STUDIES, STATE-OF-  
THE-ART REVIEWS (U)  
IDENTIFIERS: AN/GUQ-9 (U)

Experimental and theoretical studies were made for  
the validation of theoretical automatic checkout  
techniques. After a discussion of the state of  
art, detailed validation studies are described for  
three specific fault isolation techniques: the  
UNIVAC Key Element Search, the RCA-Test  
Point Algorithm Technique, and the University  
of Pennsylvania Statistical Estimation Fault  
Isolation Procedure. The extent to which such  
techniques can be applied to practical electronic  
circuits is determined; it is indicated that the  
procedure embodying estimation of component parameter  
values has most potential value as a general purpose  
fault isolation technique. Thorough discussions  
are presented of the experimental equipment designed  
and assembled, the FORTRAN programs written for the  
IBM-7094, and the PLACE programs written for the  
Bendix AN/GUQ-9 as required in the detailed  
validation studies. Additional contributions are  
presented concerning fault isolation of control  
systems as well as a variety of electronic systems  
with suggestions as to future Air Force efforts  
in the automatic checkout field. (Author) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 690 150 20/8 7/4  
YALE UNIV NEW HAVEN CONN DEPT OF PHYSICS  
ATOMS. (U)

69 6P Hughes.Vernon W. ;  
CONTRACT: AF-AFOSR-249-67  
PROJ: AF-9757  
TASK: 976702  
MONITOR: AFOSR 69-1570TR

UNCLASSIFIED REPORT

Availability: Pub. in Physics Today, v22 n2 p33-37 Feb 69.

DESCRIPTORS: (\*ATOMIC STRUCTURE, STATE-OF-THE-ART REVIEWS), ATOMS, FIELD THEORY, MUONS, ATOMIC SPECTROSCOPY, ELECTRONS, INVARIANCE, SELECTION RULES(PHYSICS), EXCITATION, MESONS, LASERS, ELECTROMAGNETIC FIELDS  
IDENTIFIERS: FINE STRUCTURE CONSTANT, LAMB SHIFT, QUANTUM ELECTRODYNAMICS (U)

Modern advances, developments and unifying accomplishments of atomic physics are reviewed. Special reference is made to quantum electrodynamics, the role of the muon, fine structure constant and the gyromagnetic ratio in recent precise experiments. This and other events connecting invariance and symmetry, atomic structure, collisions, and, maser and laser development lead to the conclusion that atomic physics now takes its place in modern fundamental physical theory, principally through the study of electromagnetic interaction of the elementary particles in the atom.(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 686 836 8/6  
ARIZONA UNIV TUCSON INST OF ARID LANDS RESEARCH  
INVENTORY OF RESEARCH ON DESERT REGIONAL TYPES, (U)

68 69P Healy,John R. ;  
CONTRACT: DA-49-092-ARO-71

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Chapter 9 of Inventory of Geographic Research on Desert Environments. See also Chapter 8, AD-668 853.

DESCRIPTORS: (\*DESERTS, REVIEWS), SCIENTIFIC RESEARCH, CLASSIFICATION, STATE-OF-THE-ART REVIEWS, RESEARCH MANAGEMENT, BACKGROUND, GEOGRAPHY, ENVIRONMENT, TERRAIN  
IDENTIFIERS: ANNOTATED BIBLIOGRAPHIES (U)  
(U)

The purpose of the inventory is to determine in detail what topics have been or are being investigated for the world's deserts, to appraise the reported work, and to disclose areas of study where further work is needed. The series of chapters does not attempt to recapitulate all information known about the deserts of the world, but rather comprises a compendium-guidebook to past and present research. It is based upon a critical review of the published literature augmented by consultations with specialists. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 684 145 20/6 14/2  
MASSACHUSETTS INST OF TECH CAMBRIDGE EXPERIMENTAL  
ASTRONOMY LAB

INVESTIGATION OF VISIBLE REGION INSTRUMENTATION FOR  
OCEANOGRAPHIC SATELLITES. VOLUME II. (U)

MAR 68 60P Conrod.A. C. ;Boersma,A. ;  
Kelly,M. G. ;  
REPT. NO. RE-31-Vol-2  
CONTRACT: N62306-2082  
PROJ: MIT-DSR-76389

UNCLASSIFIED REPORT

PORTIONS OF THIS DOCUMENT ARE ILLEGIBLE. SEE  
INTRODUCTION SECTION OF THIS ANNOUNCEMENT JOURNAL FOR CFSTI  
ORDERING INSTRUCTIONS.

SUPPLEMENTARY NOTE: See also Volume 1, AD-684 144.

DESCRIPTORS: (\*AERIAL RECONNAISSANCE, INSTRUMENTATION),  
OCEANOGRAPHIC DATA, SITE SELECTION, RADIOMETERS,  
CAMERAS, MAPPING, AERIAL PHOTOGRAPHS, PHOTOGRAPHIC  
IMAGES, STATE-OF-THE-ART REVIEWS, BAHAMA ISLANDS,  
SATELLITES(ARTIFICIAL), ULTRAVIOLET SPECTRA, VISIBLE  
SPECTRA (U)

IDENTIFIERS: SPRING SEASON, SUMMER (U)

A review of the present state of the art in visible  
region passive instruments for over-water surveying  
is reported. Experiments are described in which  
some possible techniques of data collection were  
tested. The areas in which further work is needed  
are described, and the suggested studies and  
experiments are outlined. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 684 144 20/6 14/2  
MASSACHUSETTS INST OF TECH CAMBRIDGE EXPERIMENTAL  
ASTRONOMY LAB

INVESTIGATION OF VISIBLE REGION INSTRUMENTATION FOR  
OCEANOGRAPHIC SATELLITES. VOLUME I. (U)

JUL 67 52P Conrod,A. C. ;  
REPT. NO. RE-31-Vol-1  
CONTRACT: N62306-2082  
PROJ: MIT-DSR-76389

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-684 145.

DESCRIPTORS: (\*AERIAL RECONNAISSANCE, INSTRUMENTATION),  
OCEANOGRAPHIC DATA, SPECTROMETERS, PHOTOGRAPHY, STATE-  
OF-THE-ART REVIEWS, COLOR PHOTOGRAPHY, AERIAL  
PHOTOGRAPHY, PHOTOGRAPHIC FILM, ABSORPTION, RAYLEIGH  
SCATTERING, SPECTROPHOTOMETERS, DATA PROCESSING,  
SATELLITES(ARTIFICIAL), ULTRAVIOLET SPECTRA, VISIBLE  
SPECTRA (U)

IDENTIFIERS: ARGUS ISLAND, CRAWFORD VESSEL,  
MULTISPECTRAL PHOTOGRAPHY, SATELLITE PHOTOGRAPHY (U)

A review of the present state of the art in visible  
region passive instruments for over-water surveying  
is reported. Experiments are described in which  
some possible techniques of data collection were  
tested. The areas in which further work is needed  
are described, and the suggested studies and  
experiments are outlined. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 683 369 14/2 13/9 14/4 20/5  
 AMPEX CORP REDWOOD CITY CALIF RESEARCH AND ADVANCED  
 TECHNOLOGY DIV

RESEARCH ON FAILURE INDICATOR SYSTEM. (U)

DESCRIPTIVE NOTE: Final interim rept. 1 Apr 67-31 Jul  
 68.

68 47P Markevitch, Bob V. ; van

Heeckeren, Jacob ;

REPT. NO. RR-68-19

CONTRACT: N00014-67-C-0401

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*BEARINGS, FAILURE(MECHANICS)),  
 (\*FAILURE(MECHANICS), DETECTORS), DETECTORS, MONITORS,  
 STATE-OF-THE-ART REVIEWS, VIBRATION, LASERS, PROCESSING,  
 SIGNALS, ROTATION, MODULATION, SPECTRUM SIGNATURES (U)  
 IDENTIFIERS: \*FAILURE INDICATORS (U)

Recording and frequency analysis by means of  
 coherent optical data processing techniques is  
 described with special emphasis on the detection or  
 diagnosis of failures in rotating mechanisms.  
 Vibration signals from bearing assemblies have  
 showed good correlation with themselves and poor  
 cross correlations, implying the possibility of  
 detection of specific bearing noise signatures.  
 (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 682 827 9/2 22/2  
 FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

MICROMINIATURE AEROSPACE DIGITAL COMPUTERS, (U)

JUN 68 335P Dolkart, V. M. ; Novik, G.

Kh. ; Koltypin, I. S. ;

REPT. NO. FTD-MT-24-27-68

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited machine trans. of mono.  
 Mikrominiaturnye Aerokosmicheskie Tsifrovye  
 Vychislitelnye Mashiny, Moscow, 1967 p1-348.

DESCRIPTORS: (\*SPACECRAFT, COMPUTERS), (\*COMPUTERS,  
 \*MICROELECTRONICS), DIGITAL COMPUTERS,  
 RELIABILITY(ELECTRONICS), INTEGRATED CIRCUITS,  
 TRANSISTORS, SEMICONDUCTOR DIODES, MEMORY DEVICES,  
 PRINTED CIRCUITS, PERFORMANCE(ENGINEERING), STATE-OF-  
 THE-ART REVIEWS, USSR (U)  
 IDENTIFIERS: MICROELECTRONICS, THIRD GENERATION  
 COMPUTERS, TRANSLATIONS (U)

The book is dedicated to contemporary third-  
 generation aerospace digital computers using integral  
 circuits. It examines in detail the basic  
 technological problems involved in creating such  
 machines, which are the basic factors ensuring  
 achievement of high reliability. Great attention  
 is allotted to questions of electronics, memory  
 units, and construction of contemporary foreign  
 aerospace digital computers and their application.  
 The peculiarities of construction of these machines  
 are examined, and their basic characteristics are  
 given.

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 682 463 9/5  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
USE OF MODULATED, NONCOHERENT, OPTICAL FREQUENCY  
CARRIERS IN ELECTRONIC COMPUTER ELEMENTS. (U)

JUL 68 20P Georgievskaya, E. A. ;  
Mansurov, A. N. ; Etkin, V. S. ;  
REPT. NO. FTD-HT-23-525-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Poluprovodnikovye  
Pribyry i ikh Primeneniye: Sbornik Statei (USSR)  
n17 p28-43 1967, by L. Heenan.

DESCRIPTORS: (\*COMPUTER LOGIC, OPTICAL EQUIPMENT),  
SWITCHING CIRCUITS, PHOTODIODES, MODULATION, GALLIUM  
ARSENIDES, OPTICAL COMMUNICATIONS, FIBER OPTICS, LASERS,  
LOGIC CIRCUITS, STATE-OF-THE-ART REVIEWS (U)  
IDENTIFIERS: OPTICS, TRANSLATIONS (U)

Light-coupled switching devices are surveyed with the aim of investigating their usefulness in optic digital computers and other complex logic machines. Light-emitting diodes such as GaAs diodes utilizing the injection mechanism may be used as light modulators up to frequencies of the order of 1-4 GHz. Their properties and capabilities are cited. Photodiodes with p-n and p-i-n structures are mentioned as effective demodulators on optic receivers. Their frequency operating ranges, output signal amplitudes, and temperature ranges are compared. Advantages cited for these devices are their low cost, small size, and handling convenience. Disadvantages listed include low light-generating efficiency, high receiver inertia, and losses (about 1.1 db/m), when fiber optic conductors are used as the transmission medium. Various applications of these optic devices are illustrated, e.g., a CRT beam modulation circuit, quartz generator output circuit, and phase detector, light relay (using a p-n-p-n switch as a receiver). The authors also present examples of logic circuits (and, NOT, and OR) bases on these devices. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 682 010 5/2  
INDIANA UNIV BLOOMINGTON GRADUATE LIBRARY SCHOOL  
THE ROLE OF THE LIBRARY IN RELATION TO OTHER  
INFORMATION ACTIVITIES. (U)

DESCRIPTIVE NOTE: A State-of-the-Art Review,  
AUG 68 92P Painter, Ann F. ;  
PROJ: EF-68-45  
MONITOR: TISA 23

UNCLASSIFIED REPORT

DESCRIPTORS: (\*LIBRARIES, STATE-OF-THE-ART REVIEWS),  
DOCUMENTS, TECHNICAL INFORMATION CENTERS, UNITED STATES  
GOVERNMENT, BIBLIOGRAPHIES (U)  
IDENTIFIERS: INFORMATION SERVICES (U)

Traditionally the library has been the repository of printed information and has assumed the responsibility for its acquisition, processing, storage, and dissemination. Since World War II, and more particularly in the last ten years other information activities have largely taken over some of the old functions. The purpose of the state-of-the-art is to establish on the basis of the literature the role the library plays in relation to these other information activities in the Federal Government and perhaps shed some light upon the reasons for the development of separate facilities. Some of the characteristics investigated include definitions, functions, objectives, organization, financial base, services, personnel, and the user. A two-part bibliography (alphabetical and classified) supplements the text. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 681 809 6/4  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
THE CONTEMPORARY STATE OF THE PATTERN RECOGNITION  
PROBLEM, (U)

MAR 68 24P Kovalevskii, V. A. ;  
REPT. NO. FTD-HT-23-155-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Kibernetika  
(USSR) n5 p73-86 1967, by F. Dion.

DESCRIPTORS: (=PATTERN RECOGNITION, STATE-OF-THE-ART  
REVIEWS), COMPUTERS, SPEECH RECOGNITION, MATHEMATICAL  
MODELS, ALGORITHMS, LEARNING, USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

This article surveys 32 citations (23 Soviet) covering the period up to 1967. Despite the fact that works devoted to the pattern recognition problem have been published for at least 12 years, and in increasing number, as a scientific discipline this problem still can not be considered clearly outlined. Different authors examine different statements of recognition problems; the overwhelming majority generally proceed without a statement and, thus, work on the solution of a problem that can not be formulated. The absence of a sufficiently general statement of the pattern recognition problem impedes the comparison of patterns because of the difficulty of systematizing numerous and very diverse works. Therefore, a statement of the problem that is proposed, evidently, embraces the majority of individual problems of recognition and allows us to examine them from a certain single point of view. (U)

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DJC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 678 764 11/7 14/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
RECENT ACTIVITIES IN PHOTOELASTICITY AND  
PHOTOPLASTICITY, (U)

DEC 67 43P Chia Yu-Ch'uan.;  
REPT. NO. FTD-HT-23-732-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Li Hsueh Hsueh  
Pao (Mainland China) v8 n2 p77-100 1965.

DESCRIPTORS: (=MATERIALS, NONDESTRUCTIVE TESTING),  
STRESSES, PLASTIC PROPERTIES, ELASTIC PROPERTIES,  
PHOTOMETERS, EPOXY RESINS, OPTICAL COATINGS, STRAIN  
GAGES, MATHEMATICAL MODELS, REFRACTION, STATE-OF-THE-ART  
REVIEWS, CHINA (U)  
IDENTIFIERS: TRANSLATIONS (U)

The report reviews current developments and research in photoelasticity techniques related to the solution of stress problems. Equipment used, model materials, coating methods, and solutions of plane, three-dimensional, and dynamic stress problems are described. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 677 162 13/8

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

DYNAMIC AND STATIC BALANCING OF GYROSCOPIC DEVICES, (U)

JAN 68 314P Kovalev, M. P. ; Morzhakov,

S. P. ; Teraknova, K. S. ;

REPT. NO. FTD-MT-24-309-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited machine trans. of mono. Dinamicheskoe i Staticheskoe Uravnoveshivanie Girokopticheskikh Ustroystv, Moscow, 1965 p1-304.

DESCRIPTORS: (\*GYROSCOPES, CALIBRATION), MACHINE TOOLS, GYRO STABILIZERS, GIMBALS, BALL BEARINGS, FRICTION, INSTRUMENTATION, OSCILLATION, DYNAMICS, STATICS, ROTATION, LIFE EXPECTANCY, WIRING DIAGRAMS, MEASURING INSTRUMENTS, STATE-OF-THE-ART REVIEWS, USSR (U)  
IDENTIFIERS: STATORS, TRANSLATIONS (U)

The book presents the theory of balancing rotating parts of machines and instruments demonstrating the dependence of precision of dynamic balancing upon the quality of the support. Also, it analyses basic causes of vibrations and methods of their elimination. Explanations are given of the principles of action of balancing machines and their elements, and practical recommendations on the technique of constructing and balancing them are given. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 676 866 11/5 13/8

MINISTRY OF TECHNOLOGY LONDON (ENGLAND)

THE ADVANTAGES AND LIMITATIONS OF COMMONLY USED METHODS OF NON-DESTRUCTIVE TESTING, (U)

SEP 68 19P

REPT. NO. MIN-TECH-S/T-Memo-9/68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: A collection of papers by members of the Gas Turbine Collaboration Committee Inspection Technique Panel, Non-Destructive Testing Methods Working Party.

DESCRIPTORS: (\*NONDESTRUCTIVE TESTING, STATE-OF-THE-ART REVIEWS), IRON ALLOYS, MAGNETIC MATERIALS, CRACK PROPAGATION, DEFECTS (MATERIALS), LIQUID IMMERSION TESTS, DYES, FLUORESCENCE, ULTRAVIOLET RADIATION, ULTRASONIC PROPERTIES, X RAY PHOTOGRAPHY, GAMMA RAYS, GREAT BRITAIN (U)  
IDENTIFIERS: NONFERROUS METALS (U)

The report assesses the state-of-the-art in six commonly used methods and highlights their shortcomings as well as their field of useful application. The methods are: (1) Magnetic particle inspection, (2) Penetrant inspection, (3) Ultrasonic testing, (4) X-and gamma radiography, (5) Fluoroscopy, and (6) Eddy-current testing. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 675 784 11/6 13/8  
MATERIALS ADVISORY BOARD (NAS-NRC) WASHINGTON D C  
METALWORKING PROCESSES AND EQUIPMENT. (U)

DESCRIPTIVE NOTE: Final rept.

SEP 68 90P

REPT. NO. MAB-206-M(7)

CONTRACT: DA-49-083-OSA-3131

UNCLASSIFIED REPORT

DESCRIPTORS: (\*MATERIAL FORMING. REPORTS). RESEARCH MANAGEMENT, STATE-OF-THE-ART REVIEWS. ALLOYS. MECHANICAL WORKING, DUCTILE BRITTLE TRANSITION, FAILURE(MECHANICS), PLASTIC PROPERTIES, STRAIN HARDENING, HARDNESS, MODELS(SIMULATIONS), PHOTOELASTICITY, COMPUTER PROGRAMMING, DIES. MANUFACTURING, EXTRUSION, HIGH ENERGY RATE FORMING, ROLLING(METALLURGY), BENDING, DEFORMATION, STRESSES, LUBRICATION, SINGLE CRYSTALS (U)  
IDENTIFIERS: COMPUTER AIDED DESIGN (U)

The Government Metalworking Processes and Equipment Program is a coordinated effort of the Army, Navy, Air Force and NASA to identify salient factors which limit metal deformation processes and concurrently to sponsor research to extend these limits for improvement of manufacturing capabilities. This is the final report of the committee. The advice of the committee and its two panels (one on Lubrication in Metalworking and the other on Application of Deformation Theory to practice) is in the form of 34 recommendations for R and D in the following areas of metalworking: Vibrational Energy; Hydrostatic Extrusion; Laboratory Measurements of Mechanical Properties; Superplasticity; Ductile Fracture; The Application of Computers to Deformation Processing; Heat Transfer; Crystal Mechanics; The Function of Continuum Mechanics in the Analysis and Design of Metalworking Processes; Lubrication; Application of Deformation Theory to Practice; Limitations of Extrusion Processes; Thin Sheet Rolling; The Use of Computers in Forging Die Design; The Use of Model Experiments in Forging Die Design; The Application of Plasticity Mechanics to Forging Die Design; (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 673 830 9/2  
RAND CORP SANTA MONICA CALIF  
THIRD-GENERATION COMPUTER TRENDS, (U)

AUG 68 16P Boehm,B. W. ;

REPT. NO. P-3903

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DIGITAL COMPUTERS, STATE-OF-THE-ART REVIEWS). MAN MACHINE SYSTEMS, GRAPHICS, PERFORMANCE(ENGINEERING), INTEGRATED CIRCUITS, COMPUTER PROGRAMMING, DESIGN, MEMORY DEVICES, FEEDBACK, DATA PROCESSING, SYMPOSIA (U)  
IDENTIFIERS: COMPUTERS, GRAPHICS, \*THIRD GENERATION COMPUTERS (U)

This report describes some of the prospects for third-generation computers, and also points out some of the problems and pitfalls. It discusses the problem area to which engineering managers can contribute most effectively: the inadequate feedback in the process of developing and using computer systems. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
 AD- 673 447 15/7 14/2  
 NAVAL SHIP ENGINEERING CENTER PHILADELPHIA PA PHILADELPHIA  
 DIV

TURBINE TYPE FLOWMETERS 'STATE OF THE ART' LITERATURE  
 SURVEY. (U)

DESCRIPTIVE NOTE: Final rept..  
 JUN 68 39P Castorina, Joseph S. ;  
 REPT. NO. NAVSECPHILADIV-A-771  
 PROJ: SF013-06-02  
 TASK: 3950

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*NAVAL OPERATIONS, REFUELING),  
 (\*FLOWMETERS, PERFORMANCE(ENGINEERING)), NAVAL VESSELS,  
 NAVAL VESSELS, FLUID FLOW, VELOCITY, FREQUENCY, REACTION  
 KINETICS, VISCOSITY, BOUNDARY LAYER, THERMAL EXPANSION,  
 PRESSURE, CAVITATION, CALIBRATION, TURBULENCE, PULSE  
 RATE, INSTRUMENTATION, PROBES(ELECTROMAGNETIC),  
 TRANSDUCERS, DESIGN, STATE-OF-THE-ART REVIEWS (U)  
 IDENTIFIERS: EVALUATION (U)

A survey of the literature was conducted in order to evaluate the ability of the turbine meter to meet the flow measurement needs of the Fleet. Parameters effecting meter performance were investigated as well as pertinent related topics. The turbine meter is burdened with the inherent weaknesses peculiar to most velocity sensing meters. It was found suitable for future use in shipboard automation and fueling-at-sea applications under the following provisos: a turbine meter satisfying current shipbuilding specification access flange requirements should be developed, or the specifications making this demand revised. If one of these cannot be accomplished, investigate other pulse output meter types which will meet the access flange requirement and may also drive direct totalizing devices. Application guidelines and standard practices should be prepared for the meter type(s) ultimately selected for control-input and fueling-at-sea use. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07  
 AD- 672 747 5/10  
 WASHINGTON UNIV ST LOUIS MO DEPT OF PSYCHOLOGY  
 A RESIDUAL GAIN MEASURE OF REMINISCENCE AND CLASSROOM  
 LEARNING. (U)

DESCRIPTIVE NOTE: Technical rept..  
 68 46P Peters, Edward N. ;  
 REPT. NO. TR-14  
 CONTRACT: Nonr-816(14), NSF-G22296

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also TR-15, AD-672 748.

DESCRIPTORS: (\*PSYCHOLOGICAL TESTS, RECALL), (\*LEARNING, CORRELATION TECHNIQUES), INFORMATION THEORY, INSTRUCTION MANUALS, PERFORMANCE(HUMAN), CHARACTER RECOGNITION, MECHANICAL ENGINEERING, AERONAUTICS, RELAXATION(PHYSIOLOGY), ELECTRONICS, STATE-OF-THE-ART REVIEWS, TABLES(DATA) (U)

The residual gain technique was applied in a study of the relationship between reminiscence of a motor learning task and learning in the classroom under different sets of instructions. No relationship between residualized reminiscence and classroom learning was found and there was no change in this finding under different sets of instructions. Doubt was cast on the existence of consistent individual differences in reminiscence independent of general performance level. Prior findings of relationships between reminiscence and other variables seem to be explainable in terms of statistical artifacts in earlier methods and in relationships of the other variables with general motor performance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 672 452 5/9 9/2  
ENTELEK INC NEWBURYPORT MASS

COMPUTER-ASSISTED INSTRUCTION GUIDE.

(U)

68 153P  
CONTRACT: Nonr-4757(00)

UNCLASSIFIED REPORT

Availability: Hard copy available from ENTELEK  
Inc., 42 Pleasant St., Newburyport, Mass. 01950.  
\$10.00.

DESCRIPTORS: (\*PROGRAMMED INSTRUCTION, \*COMPUTER  
PROGRAMS), SPECIFICATIONS, STATE-OF-THE-ART REVIEWS,  
COMPUTERS, TEACHING METHODS, PROGRAMMING LANGUAGES,  
INPUT OUTPUT DEVICES

(U)

IDENTIFIERS: \*COMPUTER AIDED INSTRUCTION

(U)

The CAI Guide contains the specifications of all  
operational CAI programs that have come under  
ENTELEK's surveillance since the inception of the  
CAI Information Exchange. A total of 226  
CAI programs by 160 authors of 38 CAI centers are  
cited. 30 major subject matter areas are  
represented. Research and preliminary results from  
over 50 programs cited in the Guide can be found in  
the report abstracts of the CAI Information  
Exchange.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 668 405 12/1 8/5

HARVARD UNIV CAMBRIDGE MASS LAB FOR COMPUTER GRAPHICS

GEOGRAPHY AND THE PROPERTIES OF SURFACES. N-  
DIMENSIONAL SPATIAL ANALYSIS AND COMPUTER GRAPHICS.  
PART A.

(U)

DESCRIPTIVE NOTE: Technical rept.,

APR 68 60P Lindgren, C. Ernesto S. ;  
REPT. NO. Paper-16  
CONTRACT: N00014-67-A-0298-0004  
PROJ: NR-389-147

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Harvard Papers in  
Theoretical Geography.

DESCRIPTORS: (\*GRAPHICS, COMPUTERS), SURFACES, GEOMETRY,  
GEODESICS, STATE-OF-THE-ART REVIEWS (U)  
IDENTIFIERS: COMPUTER AIDED GRAPHICS, DESCRIPTIVE (U)  
GEOMETRY, GRAPHS, CHARTS (U)

The paper, the first of a series with the same  
title, discusses the state of the art in n-  
dimensional methods of spatial analysis and selects  
one of such methods, developed within the last 10  
years, proposing its application by means of computer  
graphics techniques. (Author)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 665 696 8.10 13/10

WESTINGHOUSE ELECTRIC CORP ANNAPOLIS MD OCEAN RESEARCH AND  
ENGINEERING CENTERFEASIBILITY STUDY OF A SEDIMENT POD FOR SUBMERSIBLE (U)  
USE.

DESCRIPTIVE NOTE: Phase 1 rept.

DEC 67 174P

CONTRACT: N02306-68-C-0016

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on SEDPOD Phase 1.

DESCRIPTORS: (UNDERWATER VEHICLES, OCEAN BOTTOM  
SAMPLING), OCEANOGRAPHIC SHIPS, SPECIFICATIONS,  
DETECTORS, UNDERWATER SOUND EQUIPMENT, DENSITY,  
THERMISTORS, SHEAR STRESSES, DIGITAL SYSTEMS,  
INSTRUMENTATION, DEEP SUBMERGENCE, DESIGN,  
SEDIMENTATION, STATE-OF-THE-ART REVIEWS, LIFE  
EXPECTANCY, RELIABILITY, FEASIBILITY STUDIES  
IDENTIFIERS: MANNED SUBMERSIBLES

(U)  
(U)

The objective of the SEDPOD Study Program is to provide the Naval Oceanographic Office, Deep Vehicle Branch with information necessary to design, purchase, and fabricate a sensor package capable of measuring several mass properties of unconsolidated bottom sediments. The resulting design shall be deployed by a submersible vehicle which shall make in-situ measurements and record at several bottom locations. The device will measure in the sediment the parameters of sound velocity, attenuation, density, temperature, shear strength, and Eh/pH in water depths to 20,000 feet with 3 foot sediment penetration. This report covers the approaches used to investigate the state-of-the-art of available sensors including an extensive literature survey, visits, interviews, and contacts with suppliers and users of sensors and related instrumentation. This investigation involves a determination, where possible, of availability, cost, life expectancy, power, size, weight, reliability, and accuracy. Where sensors do not exist to perform in the environment or meet the stated requirements, a determination of the amount of development necessary has been made. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 663 226 4/2

LIBRARY OF CONGRESS WASHINGTON D C AEROSPACE TECHNOLOGY  
DIV

HAIL PREVENTION RESEARCH, (U)

DEC 67 39P Michaels, Daniel W. ;

REPT. NO. ATD-68-26-101-1

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Rept. of Surveys of Foreign  
Scientific and Technical Literature.

DESCRIPTORS: (METEOROLOGICAL PHENOMENA, HAIL), (-HAIL,  
CONTROL), CLOUDS, ATMOSPHERIC PRECIPITATION,  
METEOROLOGICAL RADAR, INTENSITY, ROCKETS, WEATHER,  
INSTRUMENTATION, ARTIFICIAL PRECIPITATION, MEASUREMENT,  
THEORY, SCIENTIFIC RESEARCH, USSR, STATE-OF-THE-ART  
REVIEWS (U)

Contents: Experimental cloud modification  
testing ranges; Instrumentation; Ice nucleants;  
VGI technique (Alazan Valley experiments);  
Samsari Range experiments; Moldavian Range  
experiments; Ukrainian Range experiments;  
Gissar Valley experiments; Chinese experiments;  
Polish experiments. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 663 198 9/2 5/11 5/8  
MASSACHUSETTS INST OF TECH CAMBRIDGE

THE COMPUTER UTILITY AND THE COMMUNITY, (U)

67 9P Fano, R. M. ;  
CONTRACT: N0001-4102(01)

UNCLASSIFIED REPORT

Availability: Published in IEEE International  
Convention Record, Pt. 12 p30-7 1967.

SUPPLEMENTARY NOTE: Report on project MAC.

DESCRIPTORS: (\*COMPUTERS, \*SOCIOLOGY), (\*TIME SHARING,  
STATE-OF-THE-ART REVIEWS), COMPUTER PROGRAMMING, MAN  
MACHINE SYSTEMS. COSTS, MANAGEMENT PLANNING AND CONTROL,  
DATA PROCESSING (U)  
IDENTIFIERS: MAC PROJECT, PRIVACY (U)

The report considers the following terms:

- (1) The state of the art in time sharing;
- (2) Computers as assistants to the individual;  
and, (3) Social implications.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZCM07

AD- 663 117 8/3

NAVAL OCEANOGRAPHIC OFFICE WASHINGTON D C

EVALUATION OF SPECTRAL WAVE HINDCASTS USING THE  
AUTOMATED WAVE PREDICTION PROGRAM OF THE NAVAL  
OCEANOGRAPHIC OFFICE. (U)

DESCRIPTIVE NOTE: Informal rept.,

OCT 67 39P Moskowitz, Lionel I. ;

REPT. NO. N00-1R-67-78

PROJ: HF-103-08-01c-01, 631-FF-DAG

UNCLASSIFIED REPORT

DESCRIPTORS: (\*OCEAN WAVES, PREDICTIONS),  
MODELS(SIMULATIONS), NUMERICAL METHODS AND PROCEDURES,  
POWER SPECTRA, WIND, SURFACE PROPERTIES, WEATHER  
FORECASTING, DEEP WATER, STORMS, OCEANOGRAPHY, STATE-OF-  
THE-ART REVIEWS (U)

For the past few years a spectral wave forecasting  
program has been under development at the Naval  
Oceanographic Office. Primarily designed as a  
first step for an automated aircraft carrier landing  
system this model, at present, represents the state  
of the art in ocean wave forecasting. The first  
section of this paper presents a brief historical  
summary and description of the wave forecasting  
model. In conjunction with New York  
University a forecast/hindcast evaluation program  
has been undertaken. The second section of this  
paper attempts to evaluate spectral hindcasts made in  
the vicinity of Bermuda, B.W.I. during the  
latter part of November 1961. Wave data recorded  
at ARGUS ISLAND, situated 25 miles SW of  
Bermuda, are the sole means of evaluation for the  
hindcasts. Comparisons of hindcasted to observed  
spectra are quite favorable. Rapidly changing  
synoptic conditions appear to be the major cause for  
discrepancies in the spectral comparisons.  
Modifications to the model for improved spectral  
forecasts are also discussed. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 662 607 20/8 7/4  
POMONA COLL CLAREMONT CALIF DEPT OF PHYSICS

LOW ENERGY X-RAY AND ELECTRON PHYSICS. (U)

DESCRIPTIVE NOTE: Final rept. 1 Jun 64-31 May 67.

DEC 67 9P Henke, Burton L. ;  
CONTRACT: AF-AFOSR-689-64

PROJ: AF-9767

TASK: 976791

MONITOR: AFOSR 67-2751

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-662 384.

DESCRIPTORS: (\*X RAY SPECTROSCOPY, STATE-OF-THE-ART REVIEWS), X RAY SPECTRA, ENERGY, INTERACTIONS, ABSORPTION, X RAYS, INSTRUMENTATION, SPECTRUM ANALYZERS, FLUORESCENCE, SINGLE CRYSTALS, DETECTION, EXCITATION, QUANTITATIVE ANALYSIS, ELECTRONS, PLASMAS(PHYSICS), SOLAR CORONA, TABLES(DATA) (U)

The research is concerned with a study of the complete interaction of the ultraviolet x-rays with matter in the 10-to-100 A wavelength region and of the associated production of photo and Auger electrons in the 10 to 1000 electron volt energy region. Such a study is important because it is on an area of atomic physics which has been hitherto neglected and because it has important applications to chemical and solid state analysis, microanalysis, high temperature plasma diagnostics, and to x-ray astronomy via rockets and satellites. The specific objectives of this grant period were: (1) The measurement and tabulation of ultraviolet x-ray interaction coefficients. (2) The continued development and refinement of methods for the generation, the detection and the spectroscopy of the low energy x-rays and electrons. (3) The application, independently and collaboratively of the low energy x-ray and electron interaction physics and its associated instrumentation to the chemical and valence band analysis of matter and high temperature plasma analysis through the ultraviolet x-ray spectroscopy of the solar corona. A resume of the results of the research and a list of publications are given. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 662 342 20/5 14/2  
AAI CORP COCKEYSVILLE MD

STUDY OF LASER APPLICATION TO VELOCITY MEASURING SYSTEM. (U)

DESCRIPTIVE NOTE: Phase 9 of technical summary rept.,

APR 67 38P Watkins, M. C. ;

REPT. NO. ER-4889

CONTRACT: AF 29(600)-4136

PROJ: AF 6888

TASK: 688802

MONITOR: MDC TR-67-136

UNCLASSIFIED REPORT

DESCRIPTORS: (\*LASERS, DOPPLER SYSTEMS), (\*VELOCITY, MEASUREMENT), (\*ROCKET-PROPELLED SLEDS, VELOCITY), FEASIBILITY STUDIES, STATE-OF-THE-ART REVIEWS, DESIGN, STEERING, CONTROL SYSTEMS, ACCELERATION (U)

The report summarizes results of the feasibility study phase utilizing a laser doppler system for determining high accuracy velocity and acceleration profiles of high speed rocket sleds. The report also presents recommendations and specifications for an operational laser velocity measuring system. Objectives of the study phase were twofold: the first and primary one being the implementation and testing of a laser doppler velocity measuring system. Construction of the experimental breadboard incorporated designs and modifications which were dictated by earlier experimental results and the latest state-of-the-art techniques; the second objective was the design, fabrication and testing of a laser beam steering control which would enable the transmitted laser energy to be concentrated on a sled-mounted retroreflector during sled travel. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 660 614 1/4 6/4  
 AERONAUTICAL SYSTEMS DIV WRIGHT-PATTERSON AFB OHIO DEPUTY  
 FOR ADVANCED SYSTEMS PLANNING

BIONICS-BASE FOR INNOVATION: A MANAGEMENT OVERVIEW  
 OF THE BIRTH AND DEVELOPMENT OF BIONICS AT WRIGHT  
 FIELD. (U)

67 33P Zahrt.K. W. ;  
 REPT. NO. ASS-TM-67-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*BIONICS, RESEARCH MANAGEMENT), (\*FLIGHT  
 CONTROL SYSTEMS, BIONICS), AIR FORCE RESEARCH, STATE-OF-  
 THE-ART REVIEWS, MANAGEMENT ENGINEERING (U)

The report presents the story of a new technology which has produced a flight control system with a learning, or self-organizing, functional capability; a system which can adapt more quickly than even the most skillful pilot to the flight characteristics of an aircraft. It promises a radical step forward in Air Force operational capability by, in effect, invisibly adding a superman in the cockpit to share the flight control duties. The story is a retrospective analysis which traces the evolution of a major state-of-the-art advance from the serendipity of early Air Force research planners. It illustrates the fact that a well-chosen, carefully nurtured, and well-managed, research program without a specific initial military objective often can provide a series of startling breakthroughs in weapon system operational effectiveness. The background information which introduces the story provides a realistic picture of the time factor involved in bringing hitherto unrelated research ideas into a well-focused, applicationally-oriented reality. Woven into the story are recurring references to the evolution of long range planning concepts within the Air Force research and development community. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 657 329 9/2  
 RAND CORP SANTA MONICA CALIF

THE SYSTEMS GAP, (U)

AUG 67 8P Armer,Paul ;  
 REPT. NO. P-3641

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared for presentation in  
 Datamation Aug 1967.

DESCRIPTORS: (\*COMPUTERS, USSR), (\*CYBERNETICS, STATE-  
 OF-THE-ART REVIEWS), ECONOMICS, FEEDBACK, MACHINES,  
 MAINTENANCE, SPARE PARTS, RELIABILITY(ELECTRONICS),  
 MAGNETIC TAPE (U)

The author discusses the state of the computer art in the USSR and comes to the inescapable conclusion that there exists a computer gap between the U.S. and the USSR. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 656 340 5/2 12/1  
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS

EFFECTIVENESS OF INFORMATION RETRIEVAL METHODS. (U)

JUN 67 52P Swets, John A. ;  
REPT. NO. Scientific-8, SBN-1499  
CONTRACT: AF 19(628)-5065, ARPA Order-627-2  
PROJ: AF 8669  
MONITOR: AFRL 67-0412

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*INFORMATION RETRIEVAL, EFFECTIVENESS),  
DECISION THEORY, ANALYSIS, STATE-OF-THE-ART REVIEWS,  
STATISTICAL ANALYSIS, MATHEMATICAL MODELS, EXPONENTIAL  
FUNCTIONS, INDEXES, DOCUMENTS (U)  
IDENTIFIERS: DENSITY FUNCTIONS, EVALUATION,  
INFORMATION RETRIEVAL EFFECTIVENESS, ON-LINE SYSTEMS (U)

Results of some fifty different retrieval methods applied in three experimental retrieval systems were subjected to the analysis suggested by statistical decision theory. The analysis validates a previously-proposed measure of effectiveness and demonstrates its several desirable properties. The examination of a wide range of data in relation to this one metric provides a clear and general assessment of the current state of the retrieval art, and shows that the art is still far from what might be considered a desirable state. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 653 461 5/11 7/1  
NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER ANNAPOLIS MD  
ANNAPOLIS DIV

A PATENT SEARCH FOR MOVING BEDS FOR ABSORPTION, TO  
CLEAN AIR. (U)

DESCRIPTIVE NOTE: Technical note,  
JUN 67 19P Calbert, W. R. ;  
PROJ: S-F013-08-03  
TASK: 4095  
MONITOR: NSRDC 208/67

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*CONTROLLED ATMOSPHERES, ADSORPTION),  
(\*SUBMARINES, CONTROLLED ATMOSPHERES), CATALYSTS,  
FLUIDIZED BED PROCESSES, STATE-OF-THE-ART REVIEWS,  
PATENTS, AIR, DECONTAMINATION, PURIFICATION  
IDENTIFIERS: ADSORBENTS (U)  
(U)

A ventilation system is yet to be developed for providing clean air to displace contaminated air in submarine atmospheres. A moving bed adsorption means is one approach to the removal of contaminations and providing of high purity air. A state of the art search was made to list and sort disclosures of interest. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 651 707 9/2  
NAVAL RESEARCH LAB WASHINGTON D C

MULTIPROCESSOR OPERATING SYSTEMS, (U)

APR 67 33P Wald, Bruce ;  
REPT. NO. NRL-6531  
PROJ: RF-001-08-41-4552

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TIME SHARING, STATE-OF-THE-ART REVIEWS),  
(\*DATA PROCESSING, OPTIMIZATION), (\*MULTIPLE OPERATION,  
COMPUTERS), COMPUTER PROGRAMMING, HISTORY, MONTE CARLO  
METHOD, DIGITAL COMPUTERS, THESES, SCHEDULING, (U)BIBLIOGRAPHIES (U)  
IDENTIFIERS: MULTIPROCESSING, MULTIPROGRAMMING (U)

The history and present status (1965) of multiprogramming, multiprogramming, and timesharing are reviewed. It is concluded that, despite their diverse histories, these techniques are destined to be intertwined. Although the mechanical problems in operating systems that exploit these techniques have largely been solved and the difficult memory allocation problem is on the brink of solution, the important question of optimum operating system strategy in initiating, suspending, and terminating jobs is largely unexplored. Suggestions are made concerning models which might be suitable for both analytic and Monte-Carlo approaches to the optimization of operating system strategy and to the selection of optimum hardware mixes. An extensive bibliography is included. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 651 102 7/4  
NAVY MARINE ENGINEERING LAB ANNAPOLIS MD

DETERMINATION OF THE SURFACE AREAS OF SELECTED SOLIDS. (U)

DESCRIPTIVE NOTE: Research and development rept.,  
MAR 67 32P Hatfield, Norman L. ;  
REPT. NO. MEL-27/67  
PROJ: Z-R011-01-01  
TASK: 0401

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SURFACE AREA, \*SOLIDS), (\*ADSORPTION,  
\*PHYSICAL CHEMISTRY), MOLECULAR PROPERTIES, MEASUREMENT,  
THEORY, MOLECULAR ASSOCIATION, PRESSURE, TEMPERATURE,  
CARBON, STATE-OF-THE-ART REVIEWS, GLASS, SUBLIMATION,  
INSTRUMENTATION, ERRORS, NAVAL RESEARCH (U)

Because of the many applications of solid-gas interface phenomena in Navy technology, a study was made of methods for the determination of the surface area of solids with the purpose of investigating new adsorbents. After a review of the literature on the many techniques for measuring surface area, the dynamic flow methods using the Brunauer-Emmett-Teller theory of molecular adsorption was selected. The error in this method is less than 5 percent, and the instrumentation required is not overly complicated. The instrumentation was set up, sample treatment and measuring techniques were standardized, and the surface areas of selected materials were determined. The values ranged from a high of almost 1000 square meters per gram for activated carbon to a low of 0.078 squares meters per gram for glass beads. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 645 461 13/13 9/2

LOCKHEED MISSILES AND SPACE CO PALO ALTO CALIF LOCKHEED  
PALO ALTO RESEARCH LABDEVELOPMENT OF IMPROVED STRUCTURAL DYNAMIC ANALYSIS.  
VOLUME I: GENERAL SURVEY. (U)

DESCRIPTIVE NOTE: Rept. for Jul 65-Aug 66.

OCT 66 120P

Coale, C. W. ; Forsberg, K. J. ;

REPT. NO. LSC-L-30-66-1

CONTRACT: AF 33(615)-3131

PROJ: AF-1370

TASK: 137003

MONITOR: AFDDL TR-66-187-Vol-1

## UNCLASSIFIED REPORT

DESCRIPTORS: (\*STRUCTURAL PROPERTIES, DYNAMICS),  
COMPUTERS, VAN MACHINE SYSTEMS, SHELLS(STRUCTURAL  
FORMS), STATE-OF-THE-ART REVIEWS, GRAPHICS, SYNTHESIS,  
SPACECRAFT, INTERACTIONS (U)

The stringent design requirements of modern aerospace vehicles have resulted in continuing demands for improvement of methods for structural dynamic analysis. Improved capabilities in this area will arise from increased analytical capability, more extensive techniques for structural synthesis and integration, and from efficient utilization of improvements in computer hardware. In this study attention has been given to three areas: (1) a review of the current state-of-the-art of structural dynamic analysis; (2) a discussion of the areas where attention should be concentrated to advance the present state-of-the-art, with particular attention given to those critical problem areas requiring long-term research; and (3) a discussion of the current and future developments in computer hardware. Particular attention is given to the exciting new field of computer graphics. It is anticipated that the field of active computer graphics will have tremendous impact on methods of structural dynamic analysis. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 337 735 20/6

AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD  
MASSTHE HISTORY AND CURRENT STATUS OF FOURIER TRANSFORM  
SPECTROSCOPY. (U)

DESCRIPTIVE NOTE: Physical sciences research papers.

JUL 66 13P

Loewenstein, Ernest V. ;

REPT. NO. AFCRL-PSRP-247, AFCRL-66-486

PROJ: AF-7670,

TASK: 767003,

## UNCLASSIFIED REPORT

Availability: Published in Applied Optics v5 p845-  
84 May 1966.SUPPLEMENTARY NOTE: Prepared for presentation at Mellon  
Institute Symposium on Far Infrared Transpose  
Spectroscopy, Pittsburgh, 10-11 June 1965.DESCRIPTORS: (\*SPECTROSCOPY, \*INTEGRAL TRANSFORMS),  
(\*INTERFEROMETERS, INTEGRAL TRANSFORMS), MULTIPLEXING,  
SCANNING, NOISE, INSTRUMENTATION, HISTORY, STATE-OF-THE-  
ART REVIEWS (U)

The paper is concerned with the development of Fourier transform spectroscopy from its beginnings in Michelson's visibility technique through the present day application using modern digital computers. Methods used in maximizing the efficiency of the computation, as well as the interferometer, are discussed. Means of finding the Fourier transform other than by digital computer are mentioned, and currently available commercial instruments are named. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 637 488 5/2 5/8 9/2  
 AIR FORCE OFFICE OF SCIENTIFIC RESEARCH WASHINGTON D C  
 DIRECTORATE OF INFORMATION SCIENCES

INFORMATION SYSTEM NETWORKS . . . LET'S PROFIT FROM  
 WHAT WE KNOW. (U)

DESCRIPTIVE NOTE: Scientific rept.

JUN 66 54P Swanson, Rowena W. ;

PROJ: 9769.

MONITOR: AFOSR

66-0873

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared for presentation at the  
 Annual National Colloquium on Information Retrieval  
 (3rd), University of Pennsylvania, Museum  
 Auditorium, 12-13 May 1966.

DESCRIPTORS: (\*INFORMATION RETRIEVAL, STATE-OF-THE-ART  
 REVIEWS), DOCUMENTS, SYSTEMS ENGINEERING, TECHNICAL  
 INFORMATION CENTERS, DATA PROCESSING, MAN MACHINE  
 SYSTEMS, COMPUTERS (U)

IDENTIFIERS: INFORMATION NETWORKS, INFORMATION  
 SYSTEMS (M)

The paper reviews information systems that are being built or planned for use in science and technology, industry and commerce, management, libraries, and military activities. The paper takes a systems engineering approach to information systems and discusses how this is applicable and relevant. The paper considers several proposals for information system networks, particularly those of the 'Weinberg Panel' and COSATI, and suggests functions appropriate for a Task Group such as COSATI has recommended. The paper also discusses current research projects concerned with systems design and evaluation, programs for implementing designs, and hardware that may be expected to be useful in the modification of present systems and the creation of new ones. The author contends that technology has significantly changed the concept of network structures, and suggests that networks can be fluid structures exploiting the switching capabilities of machines. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 637 072 15/4 17/9  
 FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

THEORY OF SCANNING IN MILITARY SCIENCE. (U)

MAR 66 248P Emelyanov, L. A. ; Abchuk, V. A. ;  
 REPT. NO. FTD-TT-65-1259,  
 MONITOR: TT 66-62043

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Unedited rough draft trans. of mono.  
 Teoriya Poiska v Voennom Delo, Moscow, 1964 p1-  
 208.

DESCRIPTORS: (\*MILITARY INTELLIGENCE, \*SCANNING),  
 (\*DETECTION, MILITARY INTELLIGENCE), THEORY,  
 INSTRUMENTATION, STATE-OF-THE-ART REVIEWS (U)

Methods of scientific analysis pertaining to problems of encounter and discovery of moving targets (ships, aircraft, tanks, etc.) are elucidated in the theory of scanning. The book shows how, on the basis of the theory of scanning, it is possible to obtain practical recommendations for the best means of action in scanning for targets and in evading scanning under various conditions. The book is intended for a wide circle of army and navy officers, as well as students and cadets at institutions of military learning. It will be useful to specialists in civil aviation, in the navy, and in the merchant marine, whose work is connected with scanning for certain movable and stationary targets. The book is based on domestic and foreign open-source materials. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 633 930 9/2 5/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

SEMIANNUAL TECHNICAL SUMMARY REPORT TO THE DIRECTOR,  
ADVANCED RESEARCH PROJECTS AGENCY FOR THE PERIOD 18  
NOVEMBER 1965 THROUGH 17 MAY 1966. (U)

DESCRIPTIVE NOTE: Technical memo..  
MAY 66 54P Baum, C. ;  
REPT. NO. T4-687/006/00.  
CONTRACT: AF 19(628)-5166, ARPA Order-773

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*INFORMATION RETRIEVAL, STATE-OF-THE-ART  
REVIEWS), (\*PROGRAMMING LANGUAGES, STATE-OF-THE-ART  
REVIEWS), (\*DATA PROCESSING, COMPUTERS), (\*COMPUTERS,  
SCHEDULING), SYNTAX, COMPUTER PROGRAMMING, COMPILERS, (U)  
SYSTEMS ENGINEERING, COMMAND AND CONTROL SYSTEMS (U)  
IDENTIFIERS: DATA BASES, LISP LANGUAGE, LUCID, NATURAL  
LANGUAGE (U)

This report describes work done in the ARPA-  
sponsored Information Processing Techniques and  
Command and Control Research and Laboratory  
Program from 18 November 1965 through 17 May  
1966. Projects covered are Time-Sharing,  
Data Base Systems, Computer Processing of  
Natural Language, and the Research and  
Technology Laboratory. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 632 594 20/4  
MASSACHUSETTS INST OF TECH CAMBRIDGE ENGINEERING PROJECTS  
LAB

DETERMINATION OF THE STATE OF THE ART IN TWO-PHASE  
GAS-LIQUID FLOW PHENOMENON. (U)

DESCRIPTIVE NOTE: Final rept., 1 Feb 61-31 Dec 65,  
APR 66 6P Gouse, S. W. , Jr. ;  
CONTRACT: Nonr-1841(73),  
PROJ: DSR-8734,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*TWO PHASE FLOW, STATE-OF-THE-ART), (\*GAS  
FLOW, TWO PHASE FLOW), (\*LIQUIDS, TWO PHASE FLOW),  
RESEARCH MANAGEMENT, BIBLIOGRAPHIES (U)

The purpose of the program was to conduct an  
extensive and detailed study of the literature on  
two-phase gas-liquid flow phenomena and to compile  
the results of such a study in a useful form. A  
three-part bibliography and subject index to the  
literature were published listing and indexing by  
subject 5,253 separate references on two-phase gas-  
liquid flow phenomena, excluding the problem areas of  
condensation, cavitation, and atomization. Four  
technical reports, presenting reviews of various  
problem areas were also completed and distributed.  
(Author) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 632 477 9/2 5/8  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
TRENDS IN COMPUTER HARDWARE.

(U)

DESCRIPTIVE NOTE: Professional paper,  
MAR 66 35P Fanwick, Charles ;  
REPT. NO. SP-2393,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*COMPUTERS, STATE-OF-THE-ART REVIEWS),  
(\*DATA PROCESSING, COMPUTERS), (\*MAN-MACHINE,  
COMPUTERS), COMPUTER PROGRAMMING, SYSTEMS ENGINEERING,  
ELECTRICAL ENGINEERING (U)

The capabilities of elements of data processing systems which might be expected to be economically available about 1971 are described. This description is based on an extrapolation by the writer of the present state-of-the-art. Systems are hypothesized containing these capabilities in their parts. It is shown that these systems have capabilities inherent in the hardware which are now expected to be provided only by sophisticated software developments. It is emphasized that software system designers should anticipate hardware capabilities which will be available at the time when their software systems are expected to be available. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 631 748 5/2 9/2 5/7  
HEBREW UNIV JERUSALEM (ISRAEL)

(U)

DATA RETRIEVAL BY COMPUTER. A CRITICAL SURVEY.

DESCRIPTIVE NOTE: Technical rept.,  
JAN 66 78P Kasher, Asa ;  
REPT. NO. TR-22,  
CONTRACT: N62558-4695,  
PROJ: NR-049-130/6,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also PB-161 547.

DESCRIPTORS: (\*INFORMATION RETRIEVAL, STATE-OF-THE-ART),  
(\*DATA, INFORMATION RETRIEVAL), COMPUTERS, ARTIFICIAL  
INTELLIGENCE, COMPUTATIONAL LINGUISTICS, CONTEXT FREE  
GRAMMARS, DATA PROCESSING, PROGRAMMING LANGUAGES,  
CONTEXT SENSITIVE GRAMMARS, ISRAEL (U)  
IDENTIFIERS: NATURAL LANGUAGE, TURING MACHINES (U)

The report constitutes a critical survey of work in the field of data-retrieval from a theoretical viewpoint. The conditions to be fulfilled, ideally, by a data-retrieval system which distinguish it from other types of data-processing systems are enumerated. Section 1 deals with problems of sentence ambiguity, syntactic and/or semantic, with special reference to context-dependence. Various fallacies and misconceptions are pointed out. Section 2 is devoted to the question of data-based versus text-based systems. Sections 3 and 4 discuss the ambivalent attitude to various theoretical results. Examples: Questions of consistency, decidability, syntactic simplification, inadequate explanation. Various attempts to overcome these difficulties are described, and their respective merits and defects discussed. Section 5 deals with the fallacious identification of 'conversation' and 'cross-examination', which is traced back to a misunderstanding of a classical paper of Turing. Section 6 digresses, to discuss systems having a two-dimensional input. Section 7 points out the fallacy of indiscriminate application of considerations of efficiency, etc., which are in general not accompanied by careful analysis of the specific systems in question. The conclusion asserts the need to concentrate research on less ambitious lines than hitherto. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 631 663 1/4 9/2 5/8  
 LITTON SYSTEMS INC WOODLAND HILLS CALIF GUIDANCE AND  
 CONTROL SYSTEMS DIV

COMPUTERS AND DISPLAYS/CONTROLS STATE-OF -THE-ART  
 TECHNOLOGY STUDIES. (U)

DESCRIPTIVE NOTE: Rept. for 1 Jun 65-31 Jan 66,  
 FEB 66 395P Pizzicara, D. J. ;  
 REPT. NO. Pub-4902,  
 CONTRACT: Nonr-4951(00).

## UNCLASSIFIED REPORT

## SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*COMPUTERS, DISPLAY SYSTEMS). (\*DISPLAY  
 SYSTEMS. \*FLIGHT INSTRUMENTS). (\*MAN-MACHINE, FLIGHT  
 INSTRUMENTS). STATE-OF-THE-ART REVIEWS, AERONAUTICS,  
 FLIGHT CONTROL SYSTEMS, COMPUTER LOGIC, MEMORY DEVICES,  
 ANALOG-DIGITAL CONVERTERS, CATHODE RAY TUBES,  
 SCANNING, ELECTRON OPTICS, COLOR, DIGITAL COMPUTERS,  
 ANALOG COMPUTERS, ELECTROLUMINESCENCE (U)  
 IDENTIFIERS: JANAIR PROJECT (U)

Computers and Displays/Controls for avionics  
 systems are discussed primarily from a technology  
 standpoint. The current state of the art is  
 reviewed, current research developments are pointed  
 out and prediction of when these developments will be  
 incorporated into avionic systems is given. With  
 respect to computers, the following major categories  
 are assessed: a) Logic, b) Memory, c)  
 Computer Organization, d) Analog/Digital  
 Conversion. Emphasis is placed on the impact of  
 batch fabrication to these areas. With respect to  
 Displays/ Controls the following major categories  
 are reviewed: a) CRT's, b) Scan Conversion,  
 c) Color, d) Analog/Digital Techniques for  
 range scaling and symbol generation, e)  
 Electroluminescence. A summary chart projecting  
 state of the art for computers and displays/controls  
 to the 1975 period is presented at the end of the  
 report. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 631 535 9/2 5/8  
 AIR FORCE OFFICE OF SCIENTIFIC RESEARCH WASHINGTON D C  
 DIRECTORATE OF INFORMATION SCIENCES

INFORMATION SCIENCES: SOME RESEARCH DIRECTIONS, (U)

66 14P Swanson, Rowena W. ;  
 PROJ: AF-9769,  
 MONITOR: AFOSR , 66-0632

## UNCLASSIFIED REPORT

Availability: Published in Air University Review  
 v17 n3 p56-67 Mar-Apr 1966. Copies to DDC users  
 only.

## SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*COMPUTERS, SCIENTIFIC RESEARCH), (\*DATA,  
 SCIENTIFIC RESEARCH). (\*MAN-MACHINE, SCIENTIFIC  
 RESEARCH). (\*PROGRAMMING LANGUAGES, SCIENTIFIC  
 RESEARCH). INFORMATION RETRIEVAL, ARTIFICIAL, REPORTS,  
 STATE-OF-THE-ART REVIEWS (U)  
 IDENTIFIERS: INFORMATION SCIENCES (U)

The paper briefly summarizes current research and  
 exploratory development activities in areas concerned  
 with document and data systems, management and  
 command systems, man-machine systems, and programming  
 languages. The orientation of the paper is toward  
 exposition. The bibliography augments a section on  
 intelligent systems and new mathematics with  
 references to several proceedings and anthologies.  
 Implications are drawn for future research and  
 military applications. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 629 352

17/2 9/5

ROME AIR DEVELOPMENT CENTER GRIFFISS AFB NY

MILITARY COMMUNICATIONS SWITCHING SYSTEM DESIGN. (U)

DESCRIPTIVE NOTE: Technical rept..

JAN 66 66P Kunze, Allan A. ;

REPT. NO. RADC-TR-65-483.

PROJ: AF-DP-64-23.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*COMMUNICATION SYSTEMS, SWITCHING), (\*ELECTRONIC SWITCHES, COMMUNICATION SYSTEMS), STATE-OF-THE-ARTS REVIEWS, MILITARY REQUIREMENTS, NETWORKS, REAL TIME, ELECTRONIC EQUIPMENT, COMMUNICATION EQUIPMENT, CONTROL SYSTEMS (U)

The past few years have witnessed the rapid evolution of communications switching. As in many other technical areas, requirements of the defense community have tended to outstrip technological progress. The result is that military communications switching systems that are now, or shortly will be, in operation are doomed to varying degrees of obsolescence in the not-too-distant future. This technical report is intended to review the state of the art in the area of communications switching, examine major problems and recommend areas of investigation. The report covers four major topics: (1) Military Communications Switching Requirements, based on Military Standard 188B, which was released early in 1964. (2) Switching System Design Problems, including a discussion of the influence of fundamentals and a description of the influence of system requirements on the choice of techniques and devices used for implementation. (3) The State of the Art in communications switching, from the point of view of system operation and useful or promising devices. (4) Recommended Research and Development Efforts, indicating technical areas in which such efforts should result in worthwhile additions to the communications switching discipline. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 628 763

6/5

AEROSPACE MEDICAL DIV AIR FORCE SYSTEMS COMMAND BROOKS AFB TEX

FOREIGN DEVELOPMENTS IN SURGICAL TRANSPLANTATION, (U)

DESCRIPTIVE NOTE: Foreign technology rept..

MAR 66 68P Friedman, Howard S. ;

REPT. NO. AMD-CR-01-1-66.

MONITOR: TT, 66-60637

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*TRANSPLANTATION, SURGICAL TECHNIQUES), MEDICAL RESEARCH, MEDICAL PERSONNEL, IMMUNOLOGY, PATHOLOGY, STATE-OF-THE-ART REVIEWS, SKIN(ANATOMY), BLOOD, NEOPLASMS, TENDONS, CARTILAGE, MUSCLES, BONES, BONE MARROW, ENDOCRINE GLANDS, HEART, LUNG, KIDNEYS, INTESTINES, EXTREMITIES, SURGICAL SUPPLIES, BIBLIOGRAPHIES, USSR (U)

A brief history of surgical transplantation in general, and of Soviet activities in this area in particular, is presented. Surgical practice and research facilities and major personalities of the Soviet Union are outlined. Soviet activities and research are discussed in reference to the transplantation of: skin; tumor transplants, fasciae; tendons; cartilage; muscle; bone and bone marrow; endocrine glands; heart; lung; kidney, intestine, and other organs; and the extremities. Biochemical, pathologic, and immunobiologic aspects are included in the discussion. A current state-of-the-art in the Soviet Union is projected. (Author) (U)



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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 625 005 5/7 9/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

NATURAL-LANGUAGE PROCESSING BY COMPUTERS-1966. (U)

DESCRIPTIVE NOTE: Professional paper,  
DEC 65 31P  
REPT. NO. SP-2279/000/00 Simmons, R. F. ;  
CONTRACT: SD-97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*COMPUTATIONAL LINGUISTICS, STATE-OF-  
THEART REVIEWS). (\*LANGUAGE, ANALYSIS), COMPUTERS,  
COUNTING METHODS, INFORMATION RETRIEVAL, SEMANTICS,  
SYNTAX, LINGUISTICS, INDEXES, MACHINE TRANSLATION (U)  
IDENTIFIERS: NATURAL LANGUAGE, SYNTHESIS (U)  
WORDS(LANGUAGE)

The eventual goal of language-processing research is the development of highly sophisticated question-answering systems. These would accept natural-language questions, search a multilingual library for pertinent factual text, translate and generate from that widely separated text essays that answered the question at any desired level of detail. Examples of existing question answers, translations, essay writers, etc., are presented. These examples are evaluated as highly inventive linguistic gadgetry that is still far from practical usefulness. Linguistic, semantic, and psychological problems both of theory and practice must be solved before this gadgetry results in useful systems. Specific difficulties facing researchers in these areas are described. The paper concludes that the strongest existing machine capability with language is that of counting and indexing words of a text. This capability has already made the computer an indispensable partner in concordancing, information retrieval, linguistic analysis, and stylistic and context analysis. Although fascinating linguistic gadgetry is available on computers, the solid contribution so far lies in this well-developed capability of word counting and indexing. (Author) (For presentation at the Annual Meeting of the American Association for the Advancement of Science, Berkeley, Calif., Dec. 26-31, 1965) (U)

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\*AAI CORP COCKEYSVILLE MD

ER-1889  
STUDY OF LASER APPLICATION TO  
VELOCITY MEASURING SYSTEM.  
(MDC-TR-67-136)  
AD- 662 342

\*ADVANCED TECHNOLOGY CORP TIMONIUM MD  
APPLICATIONS OF MILLIMETER WAVE  
RESEARCH AND TECHNOLOGY ON NAVAL  
PROBLEMS.  
AD- 813 462

\*ADVISORY GROUP FOR AEROSPACE RESEARCH  
AND DEVELOPMENT NEUILLY-SUR-SEINE  
(FRANCE)  
AGARD-AG-226  
Instability, Transition to  
Turbulence and Predictability,  
AD-A057 934

\*ADVISORY GROUP FOR AEROSPACE RESEARCH  
AND DEVELOPMENT PARIS (FRANCE)  
AGARD-592  
A Literature Survey on the  
Gyroscope and Its Applications,  
AD- 720 260

AGARD-AG-138-70  
Ballistic-Range Technology.  
AD- 713 915

AGARD-AG-179  
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AD- 776 642

AGARD-CP-187  
Flight/Ground Testing  
Facilities Correlation.  
AD-A026 937

AGARD-CP-212  
Aircraft Operational Experience  
and Its Impact on Safety and  
Survivability.  
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AGARD-LS-46-71  
Small Gas Turbines for  
Helicopters and Surface Transport.  
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Documentation - A State of the Art  
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\*AERONAUTICAL SYSTEMS DIV WRIGHT-  
PATTERSON AFB OHIO  
ASD-TR-70-33  
The Feasibility of Utilizing  
Color Cathode Ray Tubes for  
Aircraft Crew Station Displays.  
AD- 717 655

\*AERONAUTICAL SYSTEMS DIV WRIGHT-  
PATTERSON AFB OHIO DEPUTY FOR  
ADVANCED SYSTEMS PLANNING  
ASB-TM-67-1  
BIONICS-BASE FOR INNOVATION: A  
MANAGEMENT OVERVIEW OF THE BIRTH  
AND DEVELOPMENT OF BIONICS AT  
WRIGHT FIELD.  
AD- 660 614

\*AEROSPACE CORP EL SEGUNDO CALIF  
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TR-0073(3901-01)-1  
Survey of Cryogenic Cooling  
Techniques.  
(SAMSO-TR-73-34)  
AD- 755 780

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TR-0078(3526)-1  
High Altitude Attitude  
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AD-A053 322

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Region.  
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AD- 718 096

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The Induction Arc, a State-of-  
the Art Review.  
(SAMSO-TR-72-227)  
AD- 750 742

\*AEROSPACE MEDICAL DIV AIR FORCE  
SYSTEMS COMMAND BROOKS AFB TEX  
AMD-CR-01-1-66  
FOREIGN DEVELOPMENTS IN  
SURGICAL TRANSPLANTATION,  
(TT-66-60637)  
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Procedures Used to Generate  
Three- and Six-Year-Old-Child Data  
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Model from Anthropometric Data.  
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SIMULATION IMAGE GENERATION.  
VOLUME II. STUDY OF TRANSPARENCY

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AND STYLIZED IMAGE TECHNIQUES;  
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AMRL-TR-72-38

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and Recognition of Colored Targets.

AD- 746 297

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Diffraction Optics Study.

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Rarefied Gasdynamics.

AD- 759 165

\*AIR FORCE AERO PROPULSION LAB WRIGHT-

\* \* \*

PATTERSON AFB OHIO

AFAPL-TR-67-88

TURBINE ENGINE CHECKOUT.

AD- 818 906

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PERFORMANCE INVESTIGATION,

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VALIDATION OF THEORETICAL

AUTOMATIC CHECKOUT TECHNIQUES.

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Thrust Reverser and Thrust

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Lithium-Doped Silicon Solar

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Hydrazine-Fueled Aircraft  
Start-Up Feasibility Demonstration.

AD-A042 463

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AFAPL-TR-77-32

Advanced High Speed Roller

Bearing Inspection Techniques.

AD-A042 121

\*AIR FORCE CAMBRIDGE RESEARCH LABS

\* \* \*

HANSCOM AFB MASS

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EFFECTIVENESS OF INFORMATION

RETRIEVAL METHODS.

AD- 656 340

\*AIR FORCE CAMBRIDGE RESEARCH LABS L G

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HANSCOM FIELD MASS

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THE HISTORY AND CURRENT STATUS

OF FOURIER TRANSFORM SPECTROSCOPY.

AD- 637 735

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AFAPL-69-0364

EARTH SCIENCE APPLIED TO

MILITARY USE OF NATURAL TERRAIN.

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EARTH SCIENCE APPLIED TO

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AFAPL-69-0364

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AFAPL-69-0364

THE HISTORY AND CURRENT STATUS

OF FOURIER TRANSFORM SPECTROSCOPY.

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AFAPL-69-0364

AIR FORCE FLIGHT DYNAMICS LAB WRIGHT-

\* \* \*

PATTERSON AFB OHIO

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DEVELOPMENT OF IMPROVED

STRUCTURAL DYNAMIC ANALYSIS.  
VOLUME I: GENERAL SURVEY.

AD- 645 461

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Guide for MIL-F-83300-Military  
Specification -- Flying Qualities  
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AD- 884 439

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Volume I. State-of-the-Art Review

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Operations.

AD- 776 776

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AFAPL-TR-77-50

Display and Speech Devices for

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Station Applications.

AD-A049 247

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AFAPL-TR-77-50

Display and Speech Devices for

Simulator Instructor/Operator

Station Applications.

AD-A049 247

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AFAPL-TR-77-50

Display and Speech Devices for

Simulator Instructor/Operator

Station Applications.

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Station Applications.

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Display and Speech Devices for

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Station Applications.

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Display and Speech Devices for

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AD-A049 247

CORP AUTHOR-MONITOR AGENCY-2  
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## AIR-AIR

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AD- 732 934

\*AIR FORCE MATERIALS LAB WRIGHT-  
PATTERSON AFB OHIO  
\* \* \*

AEROSPACE-AFML CONFERENCE ON  
NOT OF PLASTIC/COMPOSITE  
structures. DAYTON, OHIO, MARCH 18-  
20, 1969.  
AD- 697 956

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DESIGN CRITERION.  
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State-of-the-Art.  
AD-A029 235

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Review of Quantitative NDE.  
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Improved Ultrasonic Standard  
Reference Blocks.  
AD-A042 787

\*AIR FORCE MISSILE DEVELOPMENT CENTER  
HOLLOWAN AFB N MEX  
\* \* \*

MDC-TR-67-136  
STUDY OF LASER APPLICATION TO  
VELOCITY MEASURING SYSTEM.  
AD- 662 342

\*AIR FORCE OFFICE OF SCIENTIFIC  
RESEARCH BOLLING AFB D C  
\* \* \*

AFOSR-67-2751  
LOW ENERGY X-RAY AND ELECTRON  
PHYSICS.  
AD- 662 607

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ATOMS.  
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SUPERCONDUCTIVITY AND THE  
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AD- 709 294

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Transition Flow Systems.  
AD- 726 097

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Experimental Investigation,  
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CORP AUTHOR-MONITOR AGENCY-3  
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High Temperature  
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Approach to Superconductivity.  
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AD- 735 758

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Corrosion Fatigue.  
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Lasers.  
AD- 756 015

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Training for Efficient Access in  
Memory.  
AD- 758 807

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Basis and Status of Soviet Laser  
Geodesy and Long-Base Line  
Interferometry.  
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